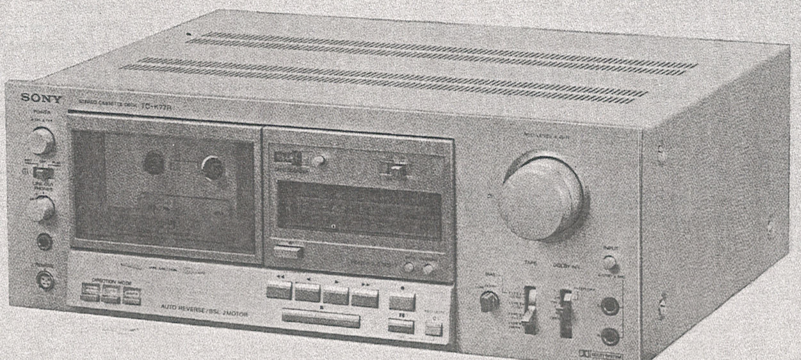
TC-K77R

AEP Model
UK Model
E Model
US Model



'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories. Noise reduction system manufactured under license from Dolby Laboratories.

STEREO CASSETTE DECK

SPECIFICATIONS

Power Requirements:	110, 120, 220 or 240 V ac adjustable, 50/60 Hz (AEP, E, UK model) 120 V ac, 60 Hz (US model)
Power Consumption:	38 W (AEP, E, UK model) 35 W (US model)
AC Outlet:	Unswitched 300 W
Dimensions:	Approx. 430 (w) x 155 (h) x 325 (d) mm 17 (w) x 6 1/8 (h) x 12 7/8 (d) inches including projecting parts and controls
Weight:	Approx. 8.3 kg, 18 lb 5 oz
Recording System:	4-track 2-channel stereo
Fast-forward and Rewind Time:	Approx. 90 sec. (with Sony C-60 cassette)
Frequency Response:	DOLBY NR OFF • With TYPE IV cassette (Sony METALLIC) 20 – 19,000 Hz 30 – 17,000 Hz (±3 dB) 30 – 13,000 Hz (±3 dB, 0 VU recording) 30 – 17,000 Hz (DIN) • With TYPE III cassette (Sony Fe-Cr) 20 – 19,000 Hz 30 – 17,000 Hz (±3 dB) • With TYPE II cassette (Sony CD-α) 20 – 18,000 Hz 30 – 16,000 Hz (±3 dB) 30 – 16,000 Hz (DIN) • With TYPE I cassette (Sony BHF) 20 – 17,000 Hz 30 – 15,000 Hz (DIN)
Wow and Flutter:	0.05 % WRMS (NAB) ±0.14 % (DIN)
S/N Ratio:	DOLBY NR OFF • With TYPE IV cassette (Sony METALLIC) 59 dB at peak level (NAB) 59 dB (DIN) • With TYPE III cassette (Sony Fe-Cr) 59 dB (NAB) 59 dB (DIN, 1975 rev.) • With TYPE II cassette (Sony CD-α) 57 dB (NAB) DOLBY NR ON Improved by 5 dB at 1 kHz, 10 dB above 5 kHz
Total Harmonic Distortion:	1.0 % (with Sony METALLIC and Fe-Cr cassettes)
Record Bias Frequency:	105 kHz

– Continued on page 2 –

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY®

SERVICE MANUAL

Inputs:
MIC (two phone jacks)
sensitivity 0.25 mV (−70 dB) for a low-impedance microphone
LINE IN (two phono jacks)
sensitivity 77.5 mV (−20 dB)
input impedance 50 kΩ

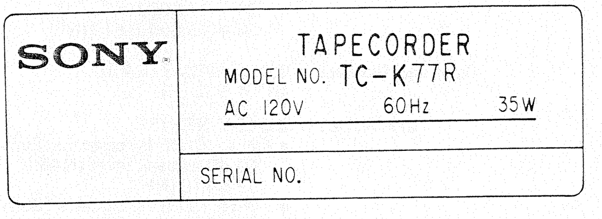
Outputs:
LINE OUT (VARIABLE) (two phono jacks)
maximum output level 0.435 V (−5 dB) at a load impedance of 50 kΩ with LINE OUT switch set to "0",
variable in five steps from 0.435 V (−5 dB) to 27 mV (−29 dB)
LINE OUT (FIXED) (two phono jacks)
output level 0.435 V (−5 dB) at load impedance of 50 kΩ
suitable load impedance more than 10 kΩ
HEADPHONES (stereo-binaural)
output level
variable in five steps from 77 mV (−20 dB) to 4.9 mV (−44 dB) at a load impedance of 8 Ω

LED Peak Program Meters:
Response range
−40 dB to +8 dB
Frequency response
20 – 20,000 Hz ± 1.5 dB
Response time
1 millisecond
Decay time (from 0 dB to −20 dB)
750 milliseconds
Overshoot
none
Indicator elements
16 elements for each channel

0 dB = 0.775 V

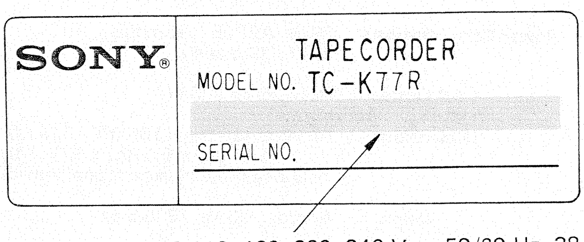
Model Identification (Specification Labels)

US model



SONY
TAPECORDER
MODEL NO. TC-K77R
AC 120V 60Hz 35W
SERIAL NO.

AEP, E, UK model

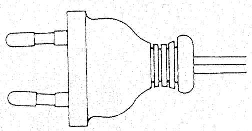


SONY
TAPECORDER
MODEL NO. TC-K77R
SERIAL NO.

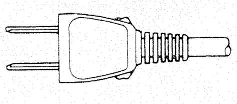
AEP, E, UK: AC 110, 120, 220, 240 V ~ 50/60 Hz 38 W

– Power Cord –

euro-plug (1-551-530-00)



parallel-blade plug (1-534-986-XX)



SERVICING NOTES

Handling Precautions for MOS ICs

Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.

(Particular care should be taken under conditions of low humidity.)

Precautions in Replacing MOS ICs

1. Store new ICs by inserting them into a urethane-polyester cushion (which is somewhat conductive), or wrapping it in aluminum foil, so that all the pins are at the same potential.
   (The ICs should be stored in that manner until mounted on the circuit board.)

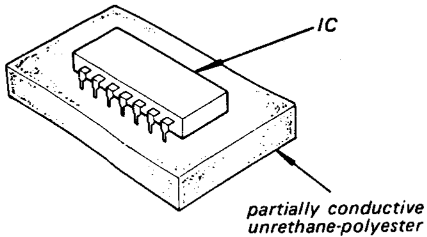

IC
partially conductive unrethane-polyester cushion

Fig. A

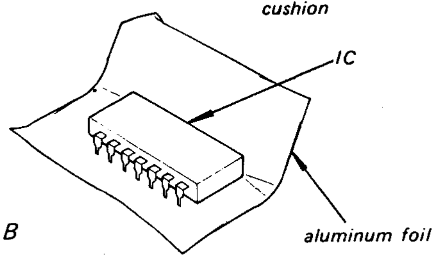

IC
aluminum foil

Fig. B

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. C. If there is a leakage path, use some other soldering iron.

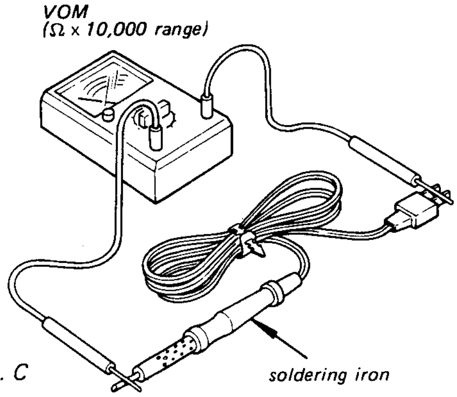

VOM
(Ω x 10,000 range)
soldering iron

Fig. C

3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.
4. The following are effective methods for handling ICs that remove the potential difference across the oxide layer.
   - Use a paper clip modified by soldering in a wire braid insert.

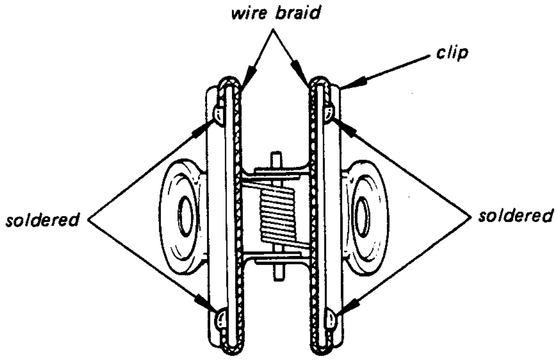

wire braid
clip
soldered
soldered

Fig. D

Make sure that there is no solder on the inside.

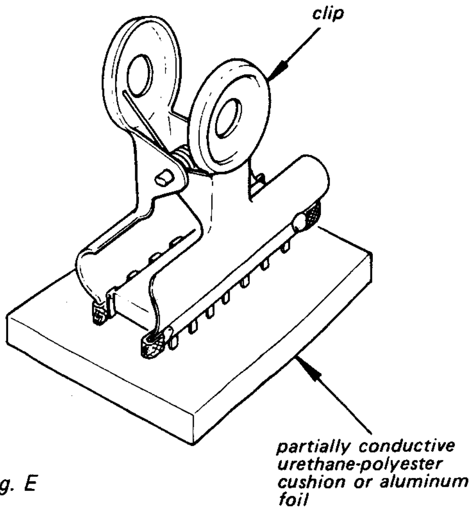

clip
partially conductive urethane-polyester cushion or aluminum foil

Fig. E

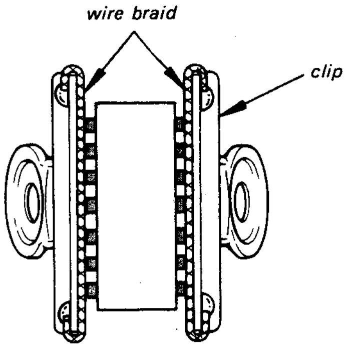

wire braid
clip

Fig. F

Make sure that all the pins are in contact with the wire braid (all the pins will then be at the same potential.).

- Take a short length of fine bare wire and wind it around the IC so that it shorts all the pins of the IC, while it is still in the urethane-polyester cushion or aluminum foil. This ensures that all the pins are at the same potential.

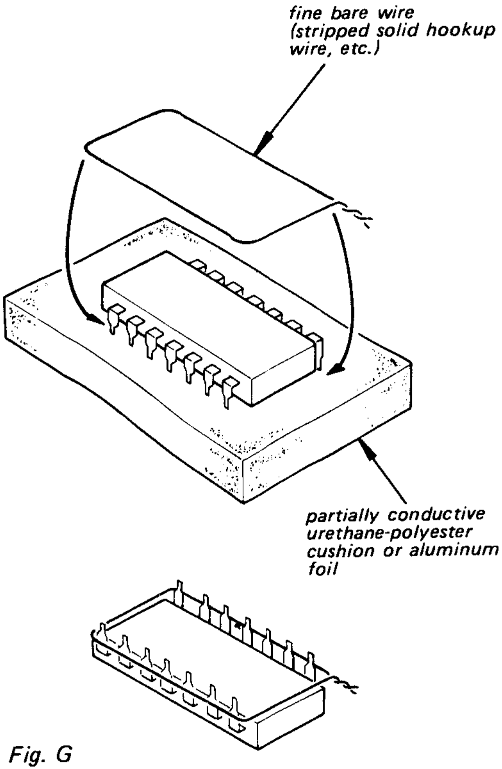

fine bare wire
(stripped solid hookup wire, etc.)
partially conductive urethane-polyester cushion or aluminum foil

Fig. G

- When it is necessary to handle the IC with the fingers, do not touch any pin, and hold the IC at the ends of its plastic-package case as shown in Fig. H.

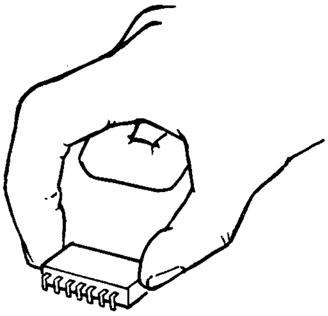


Fig. H

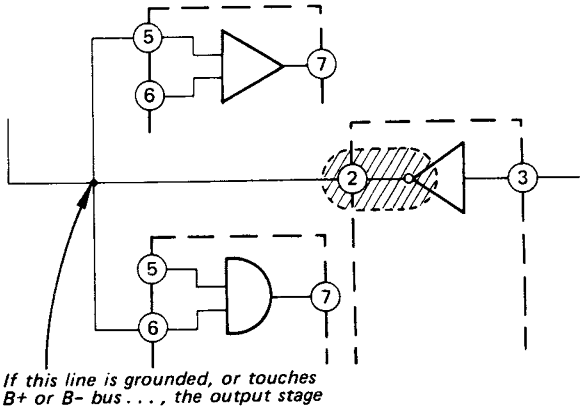
5. Method of Mounting
   Insert the IC while holding it with the modified clip, and solder all the pins with the clip still shorting the pins. (Similarly, solder all the pins while the bare shorting wire is still wound around them.). Remove the clip or the bare shorting wire only after all the pins have been soldered.

Precaution while Checking C-MOS ICs

The C-MOS ICs (Complementary MOS) are MOS ICs that have their output sections made up of N-channel and P-channel push-pull stages to increase their speed of operation. If the output terminal of these ICs comes into contact with B+ or B– voltage, then the FET which is ON at that time will either become shorted or open.

This is valid for all the output sections that are connected together by the interconnections. Even the circuits that are physically separated (and not on the same board) can be destroyed simultaneously.

Example:



If this line is grounded, or touches B+ or B– bus . . . , the output stage of this IC will be destroyed.

Fig. I

ON THE ONE-CHIP CPU

This set uses a one-chip CPU (IC601) which is written with a private and non-volatile programs. When ordering this IC, be sure to use its exclusive part number and preferably provide the name of it as follows.

IC601: "μPD547C-074"
Part No.; 8-759-147-74

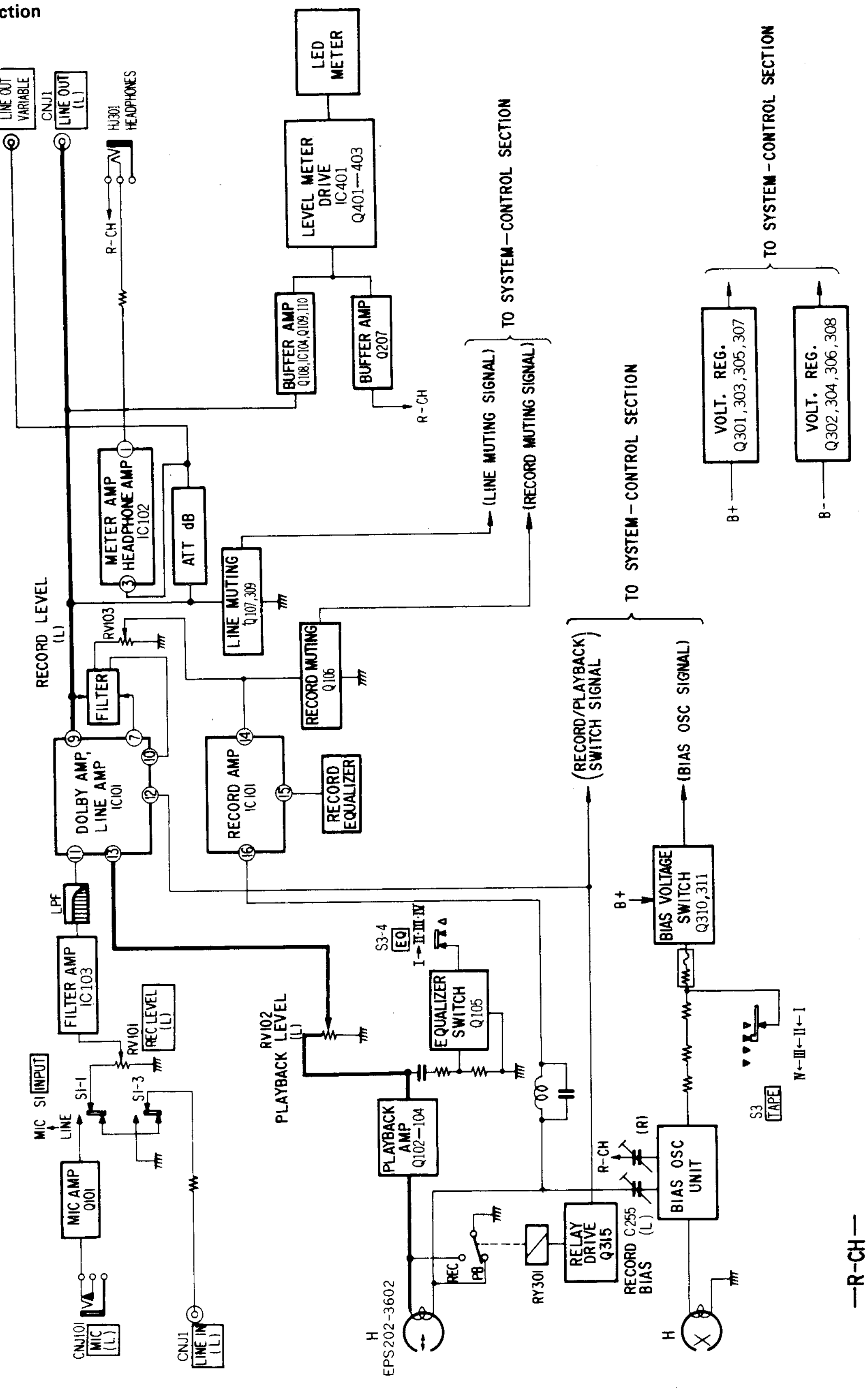
ON THE MOTOR

This set uses a dc-servo motor and no power-line frequency adaptation in needed (free from power-line frequency).

SECTION 1
OUTLINE

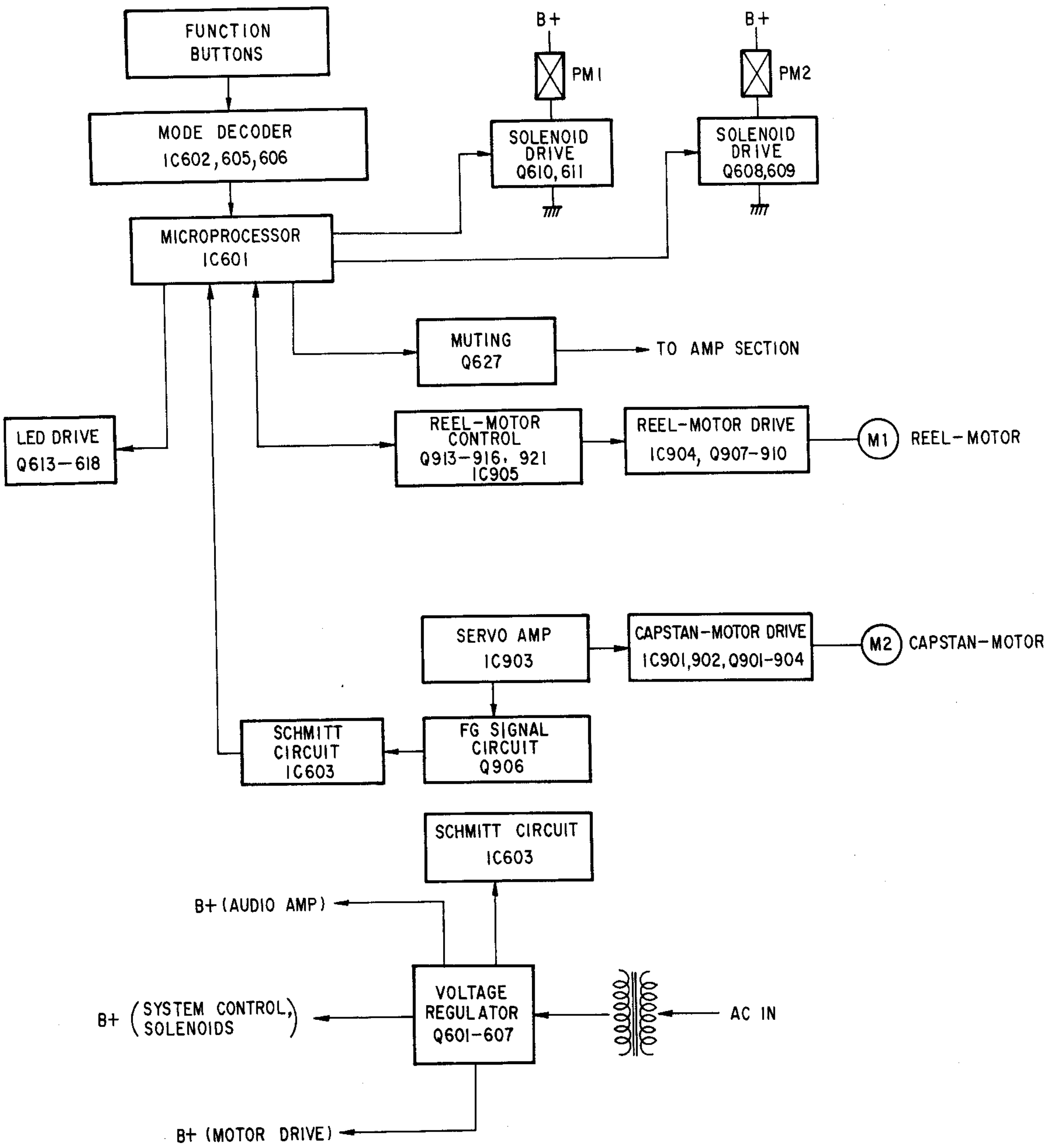
1-1. BLOCK DIAGRAMS

(1) Amp Section


CNJ1 LINE OUT VARIABLE
CNJ1 LINE OUT (L)
HJ301 HEADPHONES
R-CH
LED METER
LEVEL METER DRIVE IC401 Q401—403
BUFFER AMP Q108, IC104, Q109, 110
BUFFER AMP Q207
R-CH
TO SYSTEM-CONTROL SECTION
(LINE MUTING SIGNAL)
(RECORD MUTING SIGNAL)
TO SYSTEM-CONTROL SECTION
VOLT. REG. Q301, 303, 305, 307
VOLT. REG. Q302, 304, 306, 308
B+
B-
METER AMP HEADPHONE AMP IC102
ATT dB
LINE MUTING Q107, 309
RECORD LEVEL (L)
RV103
FILTER
RECORD MUTING Q106
DOLBY AMP, LINE AMP IC101
RECORD AMP IC101
RECORD EQUALIZER
TO SYSTEM-CONTROL SECTION
(RECORD/PLAYBACK SWITCH SIGNAL)
(BIAS OSC SIGNAL)
B+
BIAS VOLTAGE SWITCH Q310, 311
LPF
FILTER AMP IC103
S3-4 EQ
I→II·III·IV
EQUALIZER SWITCH Q105
RV102 PLAYBACK LEVEL (L)
REC LEVEL (L)
RV101
MIC S1 INPUT LINE
S1-1
S1-3
MIC AMP Q101
PLAYBACK AMP Q102—104
N←III←II←I
S3 TAPE
R-CH
(R)
BIAS OSC UNIT
RELAY DRIVE Q315
RECORD BIAS C255 (L)
RY301
REC
PB
H EPS202-3602
H
CNJ101 MIC (L)
CNJ1 LINE IN (L)
1
3
7
9
10
11
12
13
14
15
16

—R-CH—
SAME AS L-CH

(2) System-Control Section


FUNCTION BUTTONS
MODE DECODER IC602, 605, 606
MICROPROCESSOR IC601
B+
PM1
SOLENOID DRIVE Q610, 611
B+
PM2
SOLENOID DRIVE Q608, 609
MUTING Q627
TO AMP SECTION
LED DRIVE Q613–618
REEL-MOTOR CONTROL Q913–916, 921 IC905
REEL-MOTOR DRIVE IC904, Q907–910
M1
REEL-MOTOR
SERVO AMP IC903
CAPSTAN-MOTOR DRIVE IC901, 902, Q901–904
M2
CAPSTAN-MOTOR
SCHMITT CIRCUIT IC603
FG SIGNAL CIRCUIT Q906
SCHMITT CIRCUIT IC603
B+ (AUDIO AMP)
B+ (SYSTEM CONTROL, SOLENOIDS)
VOLTAGE REGULATOR Q601–607
AC IN
B+ (MOTOR DRIVE)

1-2. GENERAL DESCRIPTION

FEATURES

Auto reverse and auto repeat

Continuous recording or playback of both sides of the cassette are possible without turning the cassette over. It is also possible to set the cassette deck to play back both sides of a cassette five consecutive times.

The heads reverse quickly just before the leader tape passes them. Head reversal is triggered by the difference in light transmission between the opaque magnetic tape and the transparent leader tape, which is detected by an optical detector.

You can now record braodcast programs of 60 or 90 minutes duration with a timer with minimum interruption.

Roto-bilateral S & F record/playback and erase heads

The S & F (Sendust and Ferrite) record/playback head combines the best features of sendust and ferrite heads to provide a wider dynamic range and an extended frequency response, especially at the higher frequencies. This very durable head is capable of taking full advantage of the new metal tapes.

In the auto reverse operation the record/playback head and the erase head reverse positions so that the cassette does not have to be turned over to play the other side. These roto-bilateral heads assure the same performance characteristics in either tape transport direction:

Two linear BSL motors

The capstan and the reels are driven by separate linear BSL (brushless and slotless) motors for accurate and stable tape transport and very smooth torque.

LED peak program meters

The peak meters employ 32 separate LED elements that respond instantly to transient signal peaks over a wide dynamic range of from −40 dB to +8 dB, and so are suitable even for extended dynamic range metal tapes. An automatic and manual peak-hold function makes the meters easy to read.

Logic-controlled function buttons

"Feather-touch" function buttons controlled by a microcomputer can switch the unit directly from one mode to another. By pressing either the forward or the reverse button and either the fast-forward or the fast-reverse button simultaneously, the cassette deck can be programmed to play back in various patterns.

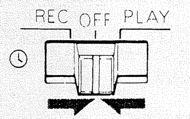
You can use the record muting button to insert a four second blank space between selections.

Remote control operation

Using the optional RM-70 remote control unit, various operations—recording, playback, record muting operation, etc.—can be remotely controlled.

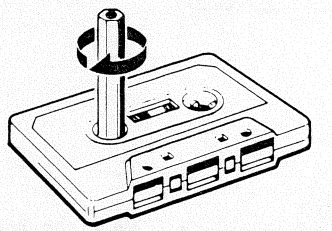
PRECAUTIONS

- If the cassette holder is not closed completely, the function buttons will not operate.
- Before turning on the POWER switch, check to see that the timer switch is set at OFF. If the power is turned on with this switch set to the REC position, previously recorded material may be erased. The REC and PLAY positions should be used only for timer-activated operation.



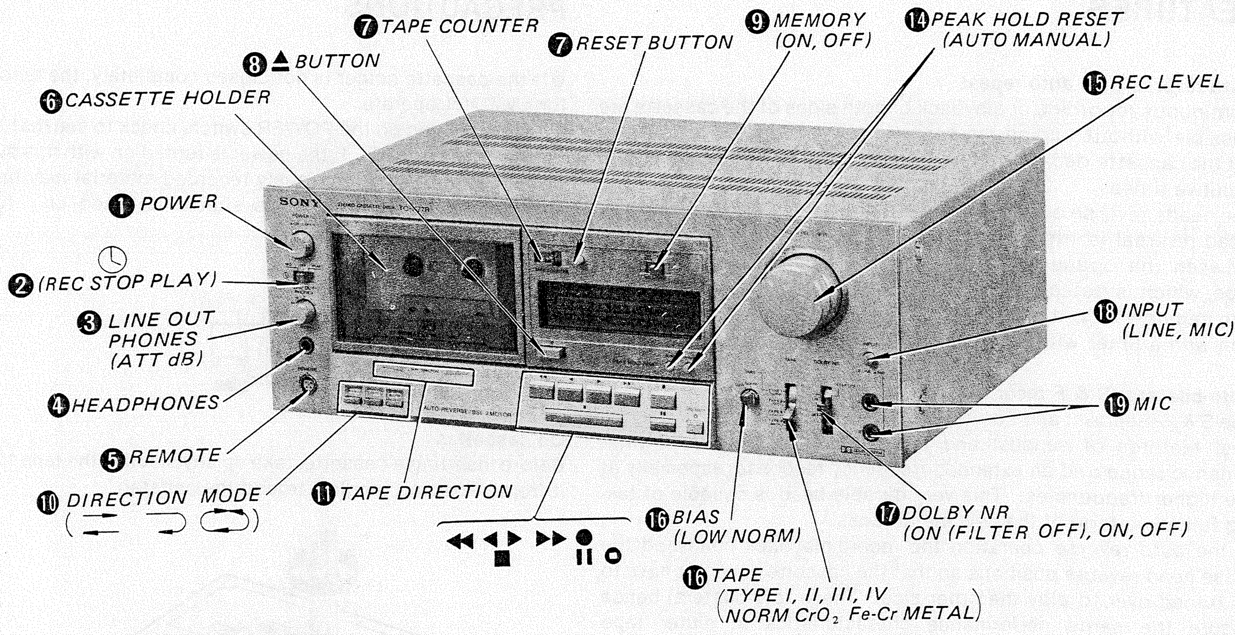
On cassettes

Before inserting a cassette, take up any slack in the tape to prevent it from becoming tangled around the capstan.



FUNCTION OF CONTROLS

The numbers in the photo are keyed to the following explanations which are took from the instruction manual. Important parts are shown by brown overprints.


❼ TAPE COUNTER
❼ RESET BUTTON
❾ MEMORY (ON, OFF)
⓮ PEAK HOLD RESET (AUTO MANUAL)
❽ ≜ BUTTON
❻ CASSETTE HOLDER
⓯ REC LEVEL
❶ POWER
❷ (REC STOP PLAY)
❸ LINE OUT PHONES (ATT dB)
❹ HEADPHONES
❺ REMOTE
❿ DIRECTION MODE
⓫ TAPE DIRECTION
⓲ INPUT (LINE, MIC)
⓳ MIC
⓰ BIAS (LOW NORM)
⓱ DOLBY NR (ON (FILTER OFF), ON, OFF)
⓰ TAPE (TYPE I, II, III, IV NORM CrO₂ Fe-Cr METAL)
SONY

❶ POWER Switch
This turns the power on or off. When the unit is turned on, the TAPE DIRECTION indicator lights up and the casssette holder, a DIRECTION MODE select button and the peak program meters illuminate. The pause button indicator blinks on and off for about four seconds after the power switch is turned on. The unit is not operational until the pause button indicator stops blinking.

❷ Timer Switch [🕒]
You can set the unit to record or play back at a predetermined time by connecting any commercially available timer. To record, set this timer switch to REC. To playback, set it to PLAY.

❸ LINE OUT/PHONES Level Control
This control governs the output level of the VARIABLE LINE OUT jacks as well as the headphone level. At the "0" position, the output level of the VARIABLE LINE OUT jacks is rated at 0.435 V and the headphone level is rated 77.5 mV (at a load impedance of 8 ohms).
When this control is set to the "3" position, the level is reduced by 3 dB, and by setting it to "6," "12," or "24," the level is reduced by that amount, i.e., by 6 dB, 12 dB, or 24 dB, from the rated output obtained at the "0" position.
These settings do not affect the peak program meters or the output level of the FIXED LINE OUT jacks.

❹ HEADPHONES Jack
Headphones may be inserted either to monitor the input signals to be recorded or to listen to a recording in the playback mode.
Headphone volume is adjustable with the LINE OUT/PHONES level control.

❺ REMOTE Control Connector
Connect the optional RM-70 remote control unit (cable length 5 m) to operate the tape transport functions from a distance. The tape deck function buttons are still operative when the remote control unit is connected.

❻ Cassette Holder

❼ TAPE COUNTER and Reset Button
The tape counter provides a numerical reference point while recording which can be used to index a recorded cassette. To reset to zero, press the reset button.

❽ Eject Button [≜]
Press this button to open the cassette holder.

❾ MEMORY Switch
Use the MEMORY switch to locate a particular point on the tape easily and quickly. At the ON position, the tape deck can be set to stop when the cassette is rewound to "999" on the tape counter, and, if the forward and rewind buttons have also been pressed, set to begin playback automatically from that point.

⑩ DIRECTION MODE Select Buttons

Press one of these three buttons to select the tape direction and mode while recording or playing back.

One way button [⇀]: To record or play back only one side of a cassette.

Single cycle button [⇄]: To record or play back both sides of a cassette by starting to record or play back towards the right. If you start recording or playback towards the left, the tape motion stops at the end of that side.

Five cycle button [⊂⊃]: To play back both sides of a cassette five times. In recording, the operation is the same as when the single cycle button is pressed.

⑪ TAPE DIRECTION Indicator

When the power is turned on, the indicator illuminates to show the direction of tape transport. To change the direction, press the ▶ or ◀ button.

⑫ Function Buttons

It is possible to switch directly from one mode to another.

When a button (except the stop button and the record muting button) is pressed, the corresponding indicator will light up.

Fast-reverse button [◀◀]: Press this button to advance the tape rapidly to the left.

Reverse button [◀]: Press this button to play back to the left. For recording, press this button while holding the record button down. If pressed together with the fast-reverse [◀◀] or the fast-forward [▶▶] button, auto play or memory play is possible.

Forward button [▶]: Press this button for playback to the right. For recording, press this button while holding the record button down. If pressed together with the ◀◀ or ▶▶ button, auto play or memory play is possible.

Fast-forward button [▶▶]: Press this button to advance the tape rapidly to the right.

Record button [●]: Press this button before adjusting the recording level. The indicators of the forward and reverse buttons flicker to indicate that the safety tab on the cassette has been detected and that recording is possible in that direction. If the tab has been removed, the indicator of that forward (or reverse) button does not flicker. To start recording, press the forward (or reverse) button while holding this button down.

Stop button [■]: Press this button to stop the tape.

Pause button [▮▮]: To pause for a moment during recording or playback, press this button. To restart, press it again. This button is also used to control more precisely the start of recording and to release the record muting mode. When the power switch is turned on, the indicator of this button flickers for about four seconds, during which time no function button will work. After about four seconds, the indicator goes off and the function buttons become operative.

Record muting button [REC MUTE ○]: Press this button to eliminate unwanted material and to insert a blank space during recording. The tape will automatically stop after four seconds. To insert a blank less than four seconds, press this button, then press the pause button to release the record muting mode. To insert a blank more than four seconds long, hold this button down for as long as you want the blank to be. Press the pause button to resume recording.

⑬ LED Peak Program Meters

These meters show the peak input level of each channel during recording, and recorded levels in the playback mode. They follow the transient peaks of high-level inputs that are too brief to be followed by conventional VU meters so that the optimum recording level can be accurately set. The highest input of each channel is held on the scale so that they can be easily read.

⑭ PEAK HOLD RESET Buttons

You can choose either of two ways to have the peak level indicated:

- When the **AUTO** button is pressed down, successive peaks are held for about 2.5 seconds, except when a higher peak occurs before 2.5 seconds have passed, in which case that peak is immediately indicated.
- When the non-locking **MANUAL** button is pressed, the peak level will be held on the scale until a higher peak occurs, when that peak will be held. To reset the peak held on the meter, just press this button. You will find this method of indicating the peak input useful when you want to know the highest peak of a tape or disc, or when you want to know both the highest peak as well as the intermittent input levels during live recording.

⑮ Recording Level Controls [REC LEVEL]

These controls adjust the recording level. The inner knob is for the right channel and the outer for the left channel. To adjust the level of the right or left channel only, turn the appropriate knob while holding the other knob.

⑯ TAPE Select Switch and BIAS Switch

Set the TAPE select switch according to the type of tape to be used. When this switch is set to the appropriate position, the optimum equalization and bias current settings are obtained for recording, and the optimum equalization setting is obtained for playback. When recording using a TYPE I (normal) tape, select either the NORM or the LOW position of the BIAS switch. For the recommended settings of the TAPE select switch and the BIAS switch for typical commercially available cassettes, see "Tape select switch recommended settings".

⑰ DOLBY NR Switch

When recording FM stereo broadcasts with the Dolby NR* (Noise Reduction) process, set this switch to the center (ON) position.

When recording programs other than FM stereo broadcasts, set this switch to the upper (ON-FILTER OFF)** position. For recording without the Dolby NR process, set this switch to the lower (OFF) position.

When playing back, set this switch to the same position used in recording. For playback of the Dolby NR processed tape, either of the ON positions (FILTER OFF or ON) can be used.

* The Dolby NR system reduces tape hiss and improves the signal-to-noise ratio. During recording, low-level high-frequency signals, which tend to be obscured by tape hiss, are boosted so that they are audible above any tape noise. When these signals are played back, the level is lowered to the original input level so that the level of any tape noise is reduced to the same extent.

** The 19 kHz pilot signal and the 38 kHz subcarrier are carried on FM broadcasts. With the DOLBY NR switch in the center ON position, the multiplex filter eliminates these signals, which otherwise might reduce the effectiveness of the Dolby system. To record programs other than FM broadcasts, disconnect the multiplex filter circuit by setting the DOLBY NR switch to the FILTER OFF position.

"Dolby" and the double-D symbol are trade marks of the Dolby Laboratories. Noise reduction system manufactured under license from Dolby Laboratories.

⑱ INPUT Select Switch

To record through the MIC jacks, depress this switch until it locks [▭]. To record through the LINE IN jacks, depress this switch again so that it is released [◻].

⑲ MIC Jacks

Any low-impedance microphone equipped with a phone plug may be used. If your microphone is equipped with a mini plug, you will need a plug adaptor.

LINE OUT Jacks

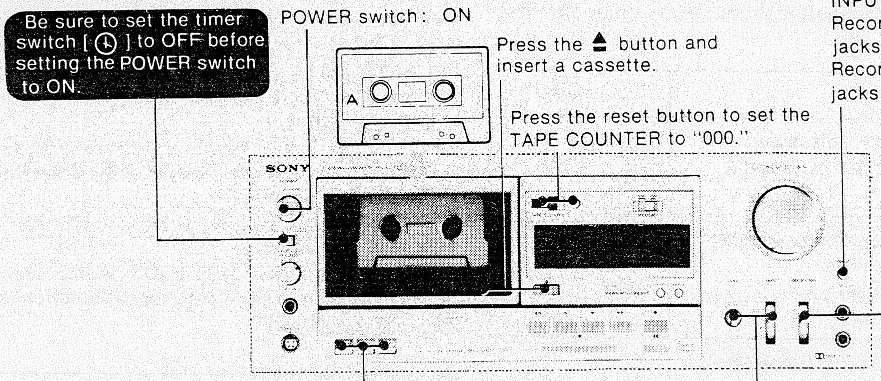
Either the FIXED or VARIABLE LINE OUT jacks can be used.

FIXED: The output level from these jacks is fixed regardless of the setting of the LINE OUT/PHONES level control.

VARIABLE: The output level from these jacks can be adjusted by the LINE OUT/PHONES level control. We recommend that you use these jacks when you want to match the output level of the tape deck with that of any other equipement connected to the amplifier.

RECORDING

PREPARATION



Be sure to set the timer switch [⏲] to OFF before setting the POWER switch to ON.

POWER switch : ON

Press the ⏏ button and insert a cassette.

Press the reset button to set the TAPE COUNTER to "000."

INPUT select switch :
Recording through the LINE IN jacks . . . . . ⊓ LINE
Recording through the MIC jacks . . . . . ⏛ MIC

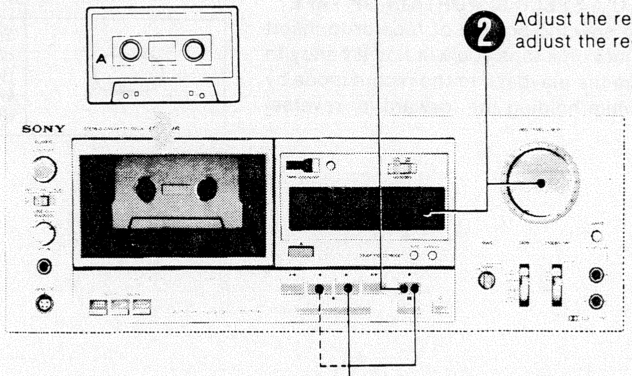
DOLBY NR switch :
Recording programs other than FM stereo broadcasts with Dolby NR process . . . . FILTER OFF (upper)
Recording FM stereo broadcasts with Dolby NR process . . . . ON (center)
Recording without Dolby NR process . . . . OFF (lower)

DIRECTION MODE select switch :
For recording on one side press the ⇄ button. For recording on both sides with the auto reverse facility, press the ⊃ or the ⊂⊃ button.

TAPE select switch and BIAS switch :
Set according to the tape to be used.

TO RECORD

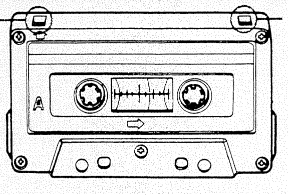
① Press the ● button.
The indicators of the forward and reverse buttons will flicker to show that recording is possible in that direction.*



② Adjust the recording level, referring to "To adjust the recording level".

③ For example : When the cassette is inserted with side A out :
—to record on side A, press the forward button [▶] while holding down the record button [●].
—to record on side B, press the reverse button [◀] while holding down the record button [●].
—to record on both sides press the forward button [▶] while holding down the record button [●].

* If the cassette's safety tab has been removed, the forward (or reverse) button's indicator will not flicker and recording in that direction cannot be made unless the tab slot is covered with plastic tape.



If this tab has been removed, the forward [▶] button's indicator will not flicker.

If this tab has been removed, the reverse [◀] button's indicator will not flicker.

TAPE SELECT SWITCH RECOMMENDED SETTINGS

The following recommended settings have been determined by critical listening tests and measurements of the electrical characteristics of commercially available cassettes. While these settings are optimum for Sony cassettes, you may want to change these settings when using cassettes produced by other manufacturers.

Tapes (C-60 and C-90)	TAPE	
AMPEX : 371 PLUS FUJI : FL TDK : D BASF : PERFORMANCE SCOTCH : DYNARANGE	BIAS LOW	TYPE I (NORM)
SONY : SHF, HFX, LNX BASF : PROFESSIONAL I MAXELL : LN, UD, UD-XL I SCOTCH : MASTER I AMPEX : GRAND MASTER I FUJI : FX-I MEMOREX : MRX_2 TDK : AD	BIAS NORM	
SONY : EHF BASF : PROFESSIONAL II MAXELL : UD-XL II SCOTCH : MASTER II AMPEX : GRAND MASTER II FUJI : FX-II MEMOREX : CrO_2 TDK : SA	TYPE II (CrO_2)	
SONY : FeCr SCOTCH : MASTER III BASF : PROFESSIONAL III PHILIPS : FERRO CHROMIUM	TYPE III (Fe-Cr)	
SONY : METALLIC Other metal tapes	TYPE IV (METAL)	

TO RECORD MATERIAL ONTO A SPECIFIC PORTION OF TAPE

When you want to re-record a specific portion of tape or to insert new material between two points on a tape you will find it handy to be able to change directly from the playback to the record mode by pressing the record button while holding the forward (or reverse) button down.

AUTO PLAY

With the MEMORY switch set at the OFF position, you can initiate auto play so that the tape plays back from the beginning immediately after rewinding. Simply press either the fast-reverse [◀◀] or the fast-forward [▶▶] button and either the forward [▶] or the reverse [◀] button simultaneously. The tape will rewind rapidly, the rewinding mode will disengage, and playback will automatically begin.

For example, if you insert the cassette with side A facing out :

—press the ▶ button together with the ◀◀ button to play back side A of the cassette.

—press the ◀ button together with the ▶▶ button to play back side B of the cassette.

Depending on which DIRECTION MODE select button has been pressed, auto reverse or auto repeat function is also possible after auto play operation.

DIRECTION MODE Switch	In Record Mode	In Playback Mode
⇄	One-side recording depending on the button either ▶ or ◀ .	One-side playback depending on the button either ▶ or ◀ .
↩	Both-sides recording when ▶ button is depressed. One-side recording when ◀ button is depressed.	Both-sides playback when ▶ button is depressed. One-side playback when ◀ button is depressed.
⟲	Same as in the usage of ↩ button. Both-sides recording when ▶ button is depressed.	Five-times playback

MEMORY STOP AND MEMORY PLAY

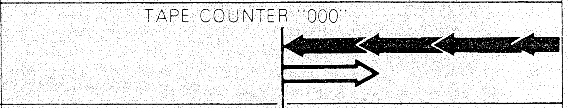
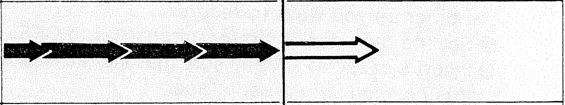
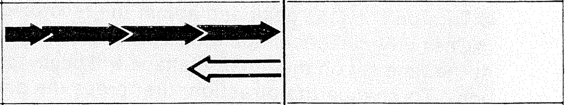
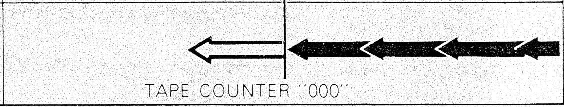
Use the MEMORY switch to quickly locate a particular point on the tape.
At the desired point on the tape press the reset button to turn the tape counter to "000," and play back or record on the tape.
Then, set the MEMORY switch to ON and locate the "000" point in the following ways. Let us assume that side A of the cassette is facing out.

Memory Stop

If the point you want to locate is on side A, press the ◀◀ button to rewind the tape to the "000" point, or press the ▶▶ button to advance the tape rapidly to the "000'" point.
If the point you want to locate is on side B, the ▶▶ button will rewind the tape to the "000" point and the ◀◀ button will advance it to the "000" point.
This operation is called "Memory Stop."

Memory Play

There are various kinds of "Memory Play," all initiated by pressing either the ▶ or ◀ button simultaneously with either the ◀◀ or ▶▶ button.

On which side is the point to locate?	Memory play operation	Function buttons	Tape path ➡ Fast-forward and fast-reverse ⇨ Playback
On side A	Rewinding the tape to the "000" point and auto play of side A from "000."	◀◀ ◁ ▶ ▷▷	
	Winding the tape rapidly to the "000" point and auto play of side A from "000."	◁◁ ◁ ▶ ▶▶	
On side B	Rewinding the tape to the "000" point and auto play of side B from "000."	◁◁ ◀ ▷ ▶▶	
	Winding the tape rapidly to the "000" point and auto play of side B from "000."	◀◀ ◀ ▷ ▷▷	

Notes

- During Memory Stop and Memory Play by pressing the ◀◀ button, the tape actually stops at the tape counter "999."
- To wind or rewind the tape rapidly further than the "000" point, press the ▶▶ button or the ◀◀ button again.
- If you keep the ▶▶ button or the ◀◀ button down while the tape rewinds past "000," the tape will not stop (or will not replay) at that point.

ERASING

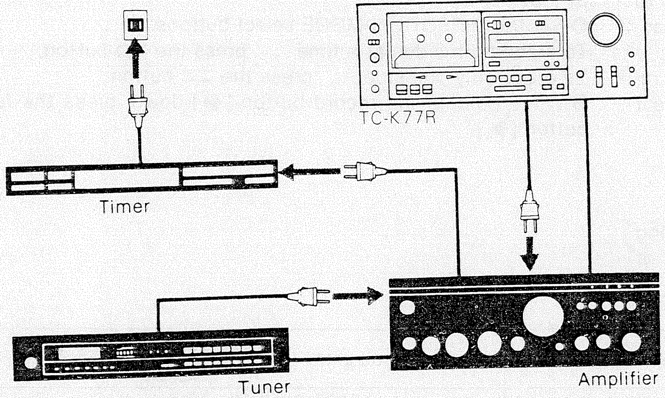
When the tape deck functions in recording mode, the erase head automatically erases any previously recorded material.
To erase without recording :
❶ Make sure that the safety tab of the cassette is in place, or that the tab slot is covered with plastic tape.
❷ Set the REC LEVEL controls fully to "0." (Disconnecting all inputs will provide a more complete erasure.)
❸ Set the TAPE switch according to the type of tape to be erased. (The TYPE IV position assures a good erasure for any type of tape.)
❹ Set the DIRECTION MODE select buttons.
To erase both sides at a time . . . . press the ⊃ button.
To erase only one side . . . . press the ⇄ button.
❺ While holding the record button [●] down, press the forward button [▶].

TIMER-ACTIVATED RECORDING AND PLAYBACK

By connecting any commercially available timer to this tape deck, the deck can be set to play back or record automatically at any desired time. As timers work in different ways be sure to read the timer's instruction manual carefully.

To record a broadcast using a timer

❶ Connect the tape deck, receiver and timer. Set the timer so that power is supplied to the connected equipment.



❷ Turn on the receiver and tune in the station which will broadcast the program you want to record.
❸ Set the tape deck's timer switch [⏲] to OFF.
❹ Insert a cassette. Make sure that the tab is intact or that the tab slot is covered with plastic tape.
❺ Turn on the tape deck and adjust the recording level.
❻ Check the direction indicated by the TAPE DIRECTION indicator. At the time set on the timer, the tape will begin to run in that direction. To change the direction, first press the pause button, then the forward [▶] or the reverse [◀] button, and, finally, the stop button.
❼ Set the timer for the desired time. (At this point power to the connected equipment will be cut off.)
❽ Set the tape deck's timer switch to REC.
The tape deck is now ready to start recording at the time set on the timer.

To play back using a timer

The connections between equipment are the same as for recording using a timer.
❶ Set the tape deck's timer switch to OFF.
❷ Turn on the receiver and set the appropriate switches for playback.
❸ Turn on the tape deck, and insert the recorded cassette.
❹ Check the direction of the TAPE DIRECTION indicator.
❺ Set the timer for the desired time. (At this point power to the connected equipment will be cut off.)
❻ Set the tape deck's timer switch to PLAY. The tape deck is now ready to start playback at the time set on the timer.

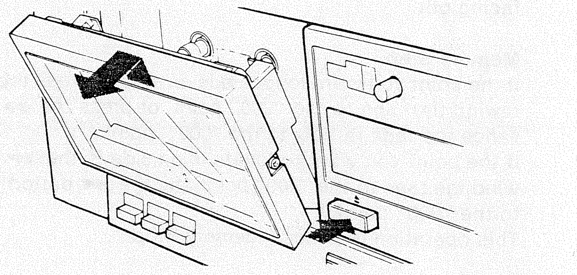
Note

The tape deck's timer switch will function properly only if the tape deck is turned on **after** the switch is set to REC or PLAY. Do not change the setting of the timer switch during the four second stand-by period immediately after the power is turned on. If you want to change the setting of the switch, turn the power off first.

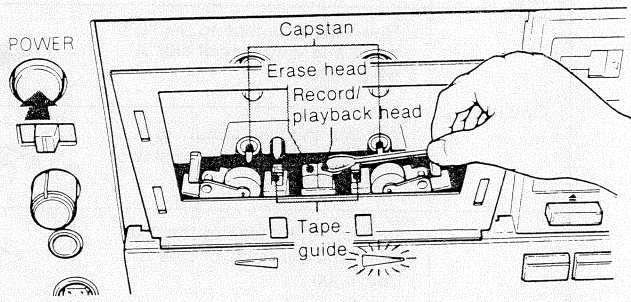
MAINTENANCE

Cleaning of heads and tape path

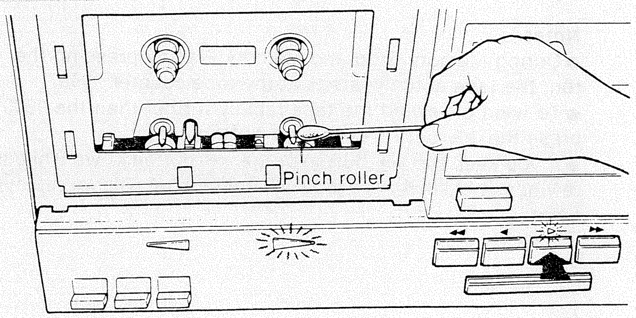
We recommend cleaning after every 10 hours of operation. To make the best possible recordings, however, you should clean all surfaces over which the tape travels before every recording.
❶ Press the eject button [⏏] to open the cassette holder and remove the window.



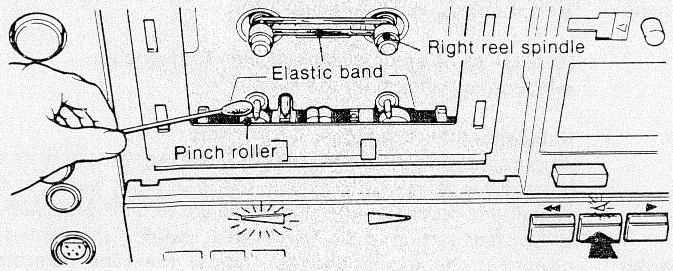
❷ Press the POWER switch to ON.
❸ Wipe the tape guide using a dry cleaning tip. Then slightly moisten the cleaning tip with cleaning fluid or alcohol and wipe the heads, and right and left capstans.



❹ Push the frame in.
❺ Press the forward button [▶] and wipe the right pinch roller, as illustrated.

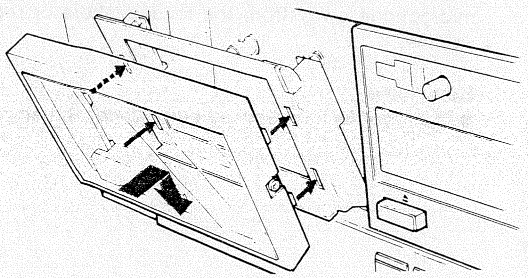


❻ Press the reverse button [◀] and wipe the left pinch roller. Because the automatic shut-off mechanism will activate if the right reel spindle is not moving, in order to wipe the left pinch roller properly, you will have to either rotate the right reel spindle with your hand or fit an elastic band over both reel spindles as illustrated so that the right reel spindle rotates with the left reel spindle.



❼ When you have finished cleaning, press the stop button. (If you used an elastic, don't forget to remove it.)

❽ Press the eject button to open the frame, and replace the window.



- After cleaning the heads and tape path, do not insert a cassette until the cleaned areas are completely dry.

Demagnetizing heads

After 20 to 30 hours of use, enough residual magnetism will have built up on the heads to begin to cause loss of high frequencies and hiss. At this time you should demagnetize the heads and all metal parts in the tape path with a commercially available head demagnetizer. Be sure that the tape deck is turned off while you demagnetize.

Cleaning the cabinet

Clean the cabinet, panel and controls with a soft cloth lightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or slovent such as alcohol or benzine.

TROUBLE CHECKS

The following trouble checks will help you correct the most common problems encountered with a tape deck. Should any problem persist after you have made these checks, consult your nearest Sony service facility.

Before proceeding with these trouble checks, first check these basic points :

- The power cord must be firmly connected.
- Amplifier connections must be firmly made.
- Heads, capstan and pinch roller should be clean.
- The amplifier controls and switches should be set correctly.

FUNCTION BUTTONS AND TAPE TRANSPORT PROBLEMS

The function buttons do not activate right after the POWER switch is turned on.

- While the indicator of the pause button is blinking, the recorder is in stand-by mode. Press the function buttons after the indicator stops to blink.

Recording or playback begins as soon as the POWER switch is turned on.

- The timer switch is set at either REC or PLAY.

The record button and the forward button do not activate.

- The cassette holder is not fully closed.

The record button does not activate.

- No cassette in the holder.
- The tab has been removed from the cassette.

The automatic shut-off mechanism activates before the end of the tape.

- The tape is slack.
- The MEMORY switch is set to ON.
- This situation may also be caused by a deformed cassette shell.
- The cassette holder is brightly illuminated.

Tape transport noise seems excessively loud in rewind or fast-forward mode.

- This situation depends upon the cassette used and not a problem.

The heads do not reverse unless the tape (including the leader tape) is wound completely.

- This can happen if there is less than 10 seconds from the starting point of the recording or playback to the beginning of the leader tape.
- This can also happen if the color of the leader tape is too dark, the material used for the leader tape is opaque, the leader tape is of a striped pattern, or the cassette has no leader tape at all.
- This can also happen if the magnetic coating is extremely thin, as when using a C-120 cassette tape.

RECORDING AND PLAYBACK PROBLEMS

Recording or playback cannot be made or there is a decrease in sound level.

- Contamination or magnetic build-up on the record/playbak head.
- Improper connection.
- Improper setting of the amplifier controls.

Excessive wow or flutter or drop out

- Contamination of the capstan or pinch roller.

Incomplete erasure

- Contamination of the erase head.

Increase of noise or erasure of high frequencies

- Magnetic build-up on the head.

Unbalanced tone in higher frequencies

- Improper setting of the DOLBY NR switch. If a cassette is recorded with the switch set to ON, play back with it at ON. If a cassette is recorded with the switch set to OFF, play back at OFF.
- Improper setting of the TAPE select switch. If recorded with the switch in the wrong position, adjust the tone controls of the amplifier in playback.

HOWLING OR HUM NOISE

Oscillation occurs when trying to record from microphones.

- The microphone is too near the loudspeakers. Move the microphone away from the loudspeakers or reduce the amplifier volume.

Hum noise

- The tape deck is stacked on or under the amplifier. Relocate it.

1-3. FUNCTION MECHANISM DESCRIPTION

The solenoid-driven mechanism changes modes from one to another.

Brake Release during fast forward mode and rewind mode. See Fig. 1-1.

1. Depress the function button ►► (FF) or ◄◄ (REW).
2. The plunger, which actuated by the solenoid PM2 supplied with direct current from Q622, moves in the direction shown by the arrow Ⓐ. When the brake solenoid slider moves along with the plunger, the head trigger lever moves in the direction shown by the arrow Ⓑ and releases the lock of the brake gear.
3. Being pulled by the spring, the brake gear turns in the direction shown by the arrow Ⓒ and comes into the drive gear. The brake gear turns furthermore in the direction shown by the arrow Ⓒ since the drive gear coupled with the flywheel is rotating in the direction shown by the arrow Ⓓ.
4. When the cam pushes the brake arm (A) in the direction shown by the arrow Ⓔ, the brake lever moves in the direction shown by the arrow Ⓕ and releases the brake.

Note: FWD. . . forward FF. . . . . fast forward
REV. . . reverse REW. . . rewind

Head Deck Drive during forward mode. See Fig. 1-2.

1. Depress the function button ► (FWD).
2. The plunger, which actuated by the solenoid PM 1 supplied with direct current from Q620, moves in the direction shown by the arrow Ⓐ, while the brake solenoid PM2 releases the brake. When the head solenoid slider moves along with the plunger, the head trigger lever moves in the direction shown by the arrow Ⓑ and releases the lock of the head gear.
3. Being pulled by the spring, the head gear turns in the direction shown by the arrow Ⓒ and comes into the drive gear. The head gear turns furthermore in the direction shown by the arrow Ⓒ since the drive gear coupled with the flywheel is rotating in the direction shown by the arrow Ⓓ.
4. When the cam pushes the head arm (A) in the direction shown by the arrow Ⓔ, the limiter plate moves in the direction shown by the arrow Ⓕ. Thus, the head deck is lifted and the head contacts the tape.
5. Before the solenoid PM2 finishes attraction, due to the limiter-plate moving, the brake lever moves in the direction shown by the arrow Ⓕ in Fig. 1-1 and the brake is kept released.

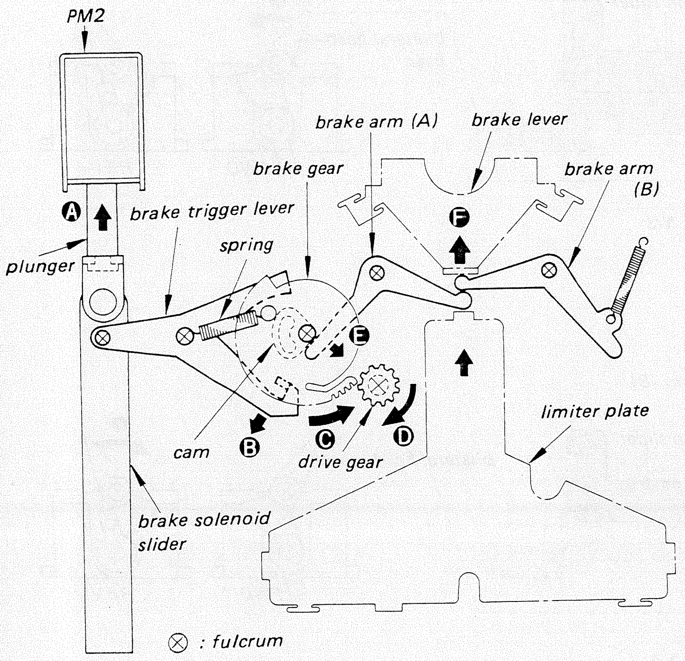

PM2
Ⓐ
plunger
brake trigger lever
spring
brake gear
brake arm (A)
brake lever
brake arm (B)
Ⓕ
Ⓔ
cam
Ⓑ
Ⓒ
Ⓓ
drive gear
limiter plate
brake solenoid slider
⊗ : fulcrum

Fig. 1-1

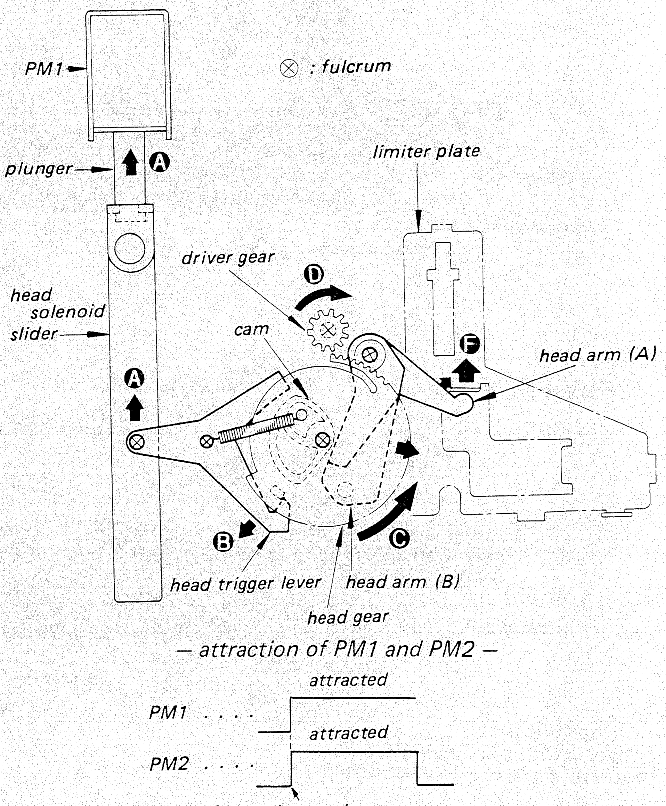

PM1
⊗ : fulcrum
plunger
Ⓐ
limiter plate
driver gear
Ⓓ
head solenoid slider
cam
Ⓕ
head arm (A)
Ⓑ
Ⓒ
head trigger lever
head arm (B)
head gear
– attraction of PM1 and PM2 –
attracted
PM1 . . . .
attracted
PM2 . . . .
start of forward operation

Fig. 1-2

Roto-Bilateral Head Mechanism

Transition from FWD mode to REV mode.
See Fig. 1-3.

1. Depress the function button ◄ (REV) or set the DIRECTION MODE switch to make REV mode at the end of a tape in FWD mode.
2. When the plunger is actuated by the solenoid (PM 1) supplied with direct current from Q620, the head solenoid releases once and the head-solenoid slider momentarily moves in the direction shown by the arrow Ⓐ.
3. The head-solenoid slider's movement makes the head gear turn in the direction shown by the arrow Ⓑ.
4. With the head gear turning, the cam pushes the head arm (B) in the direction shown by the arrow Ⓒ and the drive slider also moves in the same direction.
5. Since the drive slider and the direction slider are connected with the reverse hook lever, the direction slider moves in the direction shown by the arrow Ⓓ and the bilateral head gear is pushed in the direction shown by the arrow Ⓔ.
   Consequently, the record/playback head is turned 180-degree and the REV mode is set.

Transition from REV mode to FWD mode.
See Fig. 1-4.

1. Depress the function button ► (FWD) or set the DIRECTION MODE switch to make FWD mode at the end of a tape in REV mode.
2. When the plungers are simultaneously actuated by the solenoids (PM1, 2) driven by signal from IC601, the head and brake solenoid sliders move in the direction shown by the arrow Ⓕ.
3. The brake-solenoid slider lifts the reverse hook lever and the head-solenoid slider's movement makes the head gear turn in the direction shown by the arrow Ⓖ.
4. With the head gear turning, the cam pushes the head arm (B) in the direction shown by the arrow Ⓗ and the drive slider also moves in the same direction.
   However, the direction slider does not move because it is fastened by the reverse-hook lever.
5. Since the pin ❶ of the drive slider pushes the reverse lever on the direction slider in the direction shown by the arrow Ⓘ, the pin ❷ is pushed in the direction shown by the arrow Ⓙ and the reverse slider moves in the direction shown by the arrow Ⓚ.
6. Consequently, when the bilateral head gear is pushed in the direction shown by the arrow Ⓛ, the record/playback head is turned 180-degrees and the FWD mode is set.

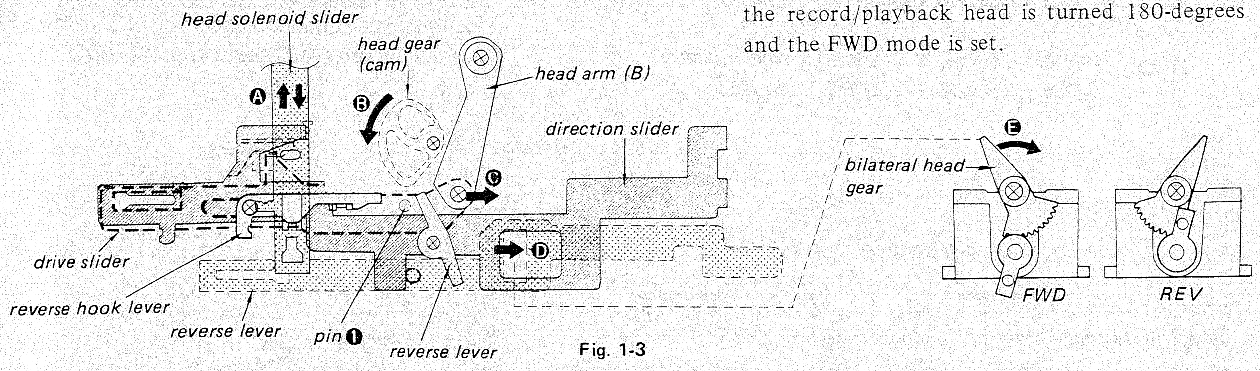

head solenoid slider
Ⓐ
head gear (cam)
Ⓑ
head arm (B)
direction slider
Ⓒ
Ⓓ
Ⓔ
bilateral head gear
drive slider
reverse hook lever
reverse lever
pin❶
reverse lever
FWD
REV

Fig. 1-3

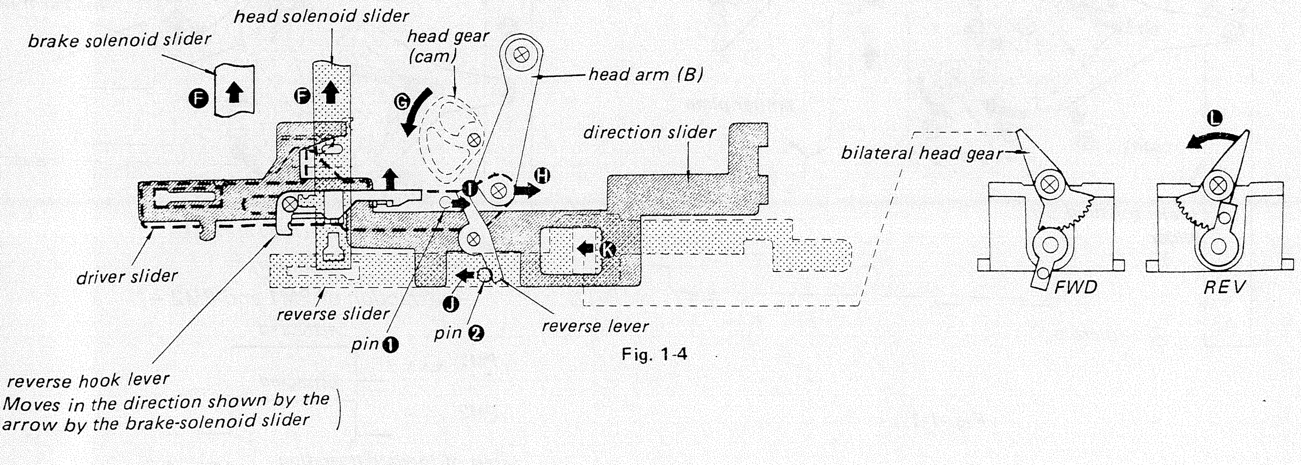

head solenoid slider
brake solenoid slider
Ⓕ
Ⓕ
head gear (cam)
head arm (B)
Ⓖ
direction slider
Ⓘ
Ⓗ
bilateral head gear
Ⓛ
driver slider
Ⓚ
reverse slider
Ⓙ
pin❷
pin❶
reverse lever
FWD
REV
reverse hook lever
(Moves in the direction shown by the arrow by the brake-solenoid slider)

Fig. 1-4

1-4. TROUBLESHOOTING THE SET

1. When the Set does not Operate AT ALL:

NOTABLE SYMPTOM	CHECKINGS TO BE MADE TO RECORD/PLAYBACK, SYSTEM-CONTROL OR SERVO CIRCUIT	CHECKINGS TO BE MADE TO DECK MECHANISM
Meter lamps do not light. Meter lamps do not light. Pause lamp does not go on and off after POWER switch turned ON.	Check B+-line voltage. Check 9.7 V B+-line voltage. Check for "0" state at terminal 7 (reset) of IC601. Check for presence of oscillation signal at terminals 1 and 42 of IC601.	N/A N/A
Meter lamps turned ON. Pause lamp goes on and off after POWER switch turned ON. Only function-button lamps light up in timer play.	Check for 130 Hz signal at terminal 6 of IC601.	Check for capstan motor turning.
Meter lamps turned ON. Pause lamp goes on and off after POWER switch turned ON. Fucntion-button lamps do not light in timer play.	Check for "1" state at terminal 6 (stop) of IC602.	N/A
Function-button lamps light up and soon go OFF.	Check for B+ voltages for PM1 and PM2. Check D616. Check for kick signal presences from Q606 and Q607.	Gears got twisted. Flywheel not turning. Solenoid positions not proper.
Capstan motor does not turn.	Check servo circuit.	Gears got twisted.

2. In Case the Mode Changes from One to Another Inadverdently when Function Button is Pressed.

Check the circuits from terminals 9 and 14 of IC602 to IC601.

3. When the Set Operates for a Short Periods.

NOTABLE SYMPTOM	CHECKINGS TO BE MADE TO RECORD/PLAYBACK, SYSTEM-CONTROL OR SERVO CIRCUIT	CHECKINGS TO BE MADE TO DECK MECHANISM
Set operates only while function button is pressed. Function-button lamps light up, and they go OFF right after solenoids started operation. Pause lamp starts go ON and OFF.	Check circuit between shut-off transistor Q624 and terminal 5 of IC601. Check for B+ voltage for system control circuit. Check for input signal to terminal 6 of IC601.	N/A
Flywheel stops turning right after deck mechanism started operation.	Check the motor-servo cirucit.	Check mechanism section.

4. When the Set does not Rewind.

NOTABLE SYMPTOM	CHECKINGS TO BE MADE TO RECORD/PLAYBACK, SYSTEM-CONTROL OR SERVO CIRCUIT	CHECKINGS TO BE MADE TO DECK MECHANISM
Rewind lamp lights up. Fast-forward operation is normal.	Check circuit between terminal 32 of IC601 and Q916.	N/A
Fast-forward operation is defective. Fast-forward and rewind lamps light up.	Check reel motor. Check circuits from terminals 18 and 16 to Q605 through Q608.	N/A
Rewind operation stops in a short period.	Check circuit between terminal 5 of IC601 and Q624.	N/A

5. When the Set does not Fast-Forward.

NOTABLE SYMPTOM	CHECKINGS TO BE MADE TO RECORD/PLAYBACK, SYSTEM-CONTROL OR SERVO CIRCUIT	CHECKINGS TO BE MADE TO DECK MECHANISM
Fast-forward lamp light up. Rewind operation is normal.	Check circuit between terminal 32 of IC601 and Q916.	N/A
Fast-forward lamp lights up. Rewind operation is defective. Fast-forward operation ceases shortly.	Check circuits from terminals 16 and 18 of IC601 to Q605 through Q608. Check reel motor. Check circuit between terminal 5 of IC601 and Q624.	N/A

6. **When the Set does not Reverse.**

NOTABLE SYMPTOM	CHECKINGS TO BE MADE TO RECORD/PLAYBACK, SYSTEM-CONTROL OR SERVO CIRCUIT	CHECKINGS TO BE MADE TO DECK MECHANISM
Reverse lamp goes OFF shortly after lighting up. Deck mechanism does not operate (Head base does not rise).	Check circuit between terminal 17 of IC601 and Q610 and Q611. Check circuits between terminal 16 and Q606 and Q607.	N/A
Rewind operation is normal.	Check circuits around terminal 17 of IC601.	N/A
Reverse lamp lights up. Head position reverses in four seconds after reverse lamp turning ON.	Check circuits from Q623, Q619 and Q620 to terminal 4 of IC601.	N/A
Reverse operation ceases shortly after starting reversing.	Check circuit between terminal 5 of IC601 and Q624.	N/A

7. **When the Set does not Forward.**

NOTABLE SYMPTOM	CHECKINGS TO BE MADE TO RECORD/PLAYBACK, SYSTEM-CONTROL OR SERVO CIRCUIT	CHECKINGS TO BE MADE TO DECK MECHANISM
Forward lamp lights up only for a short period. Deck mechanism does not operate (Head base does not rise).	Check circuits associated with terminals 17 and 18 of IC601. Check circuits from terminal 16 of IC601.	N/A
Reverse operation is normal. Rewind operation is defective.	Check circuit from terminal 18 of IC601.	N/A
Forward lamp lights up and forward operation ceases in four seconds.	Check circuit between terminal 4 of IC601 and Q623.	N/A
Forward operation ceases shortly after forwarding.	Check circuit from terminal 5 of IC601.	

8. When the Set does not Perform Quick-Reversion.

IC601 is normal when it operates with "1"-state signal at its terminal 4.

9. When the Set Shuts Off.

IC601 is normal when the set does not shut off with a "0"-state signal at terminal 5 of IC601.

10. When the Timer Play is Defective.

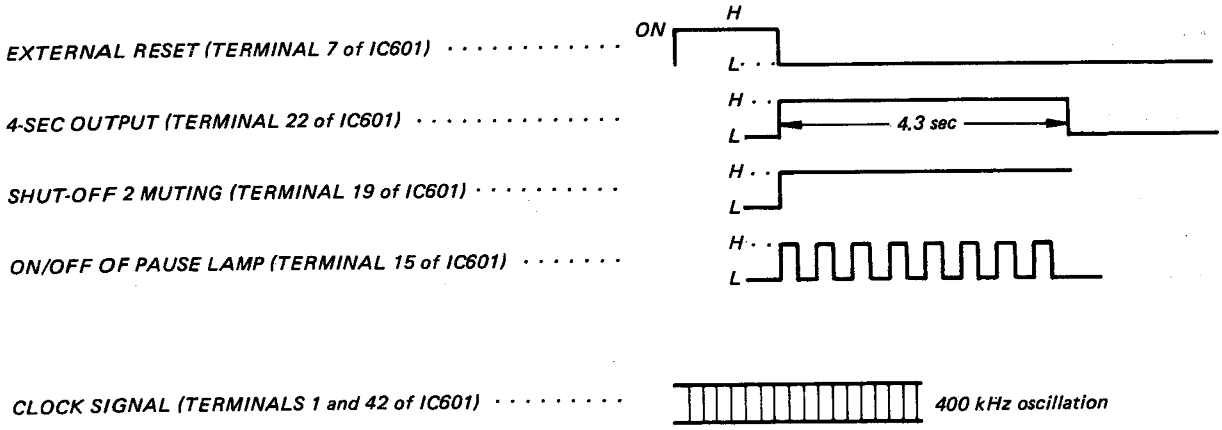
IC601 is normal when the set operates in forward mode with a "1"-state signal fed to terminal 3 of IC601 when the POWER is turned ON.

Check the direction switches.

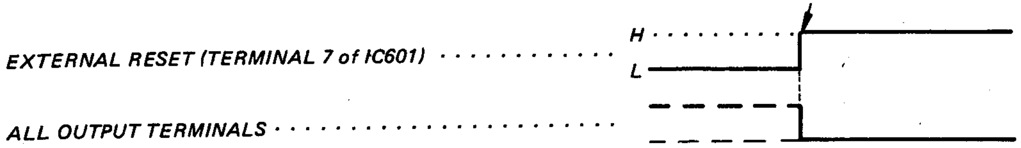
1-5. TIMING CHARTS

The timing charts of the system-control section are given below.

1. **POWER switch turned ON:**

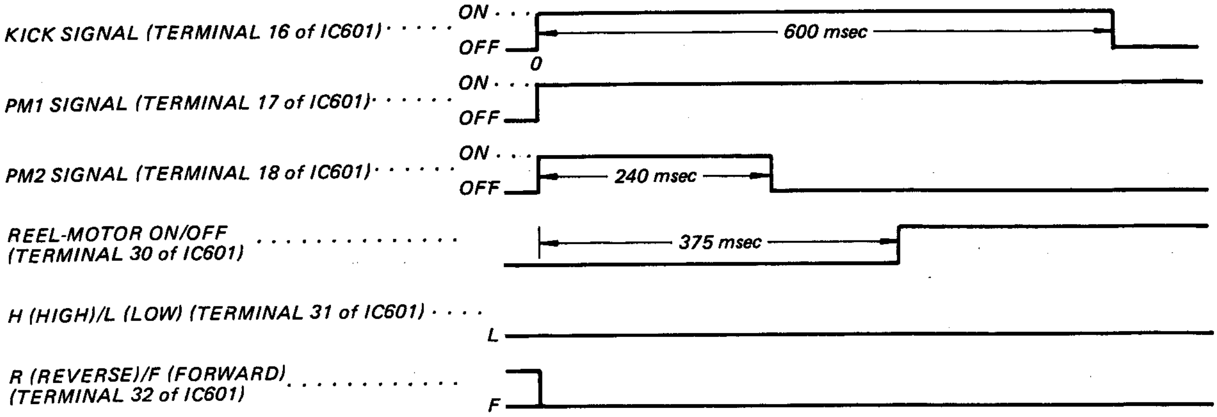


2. **POWER switch turned off:**

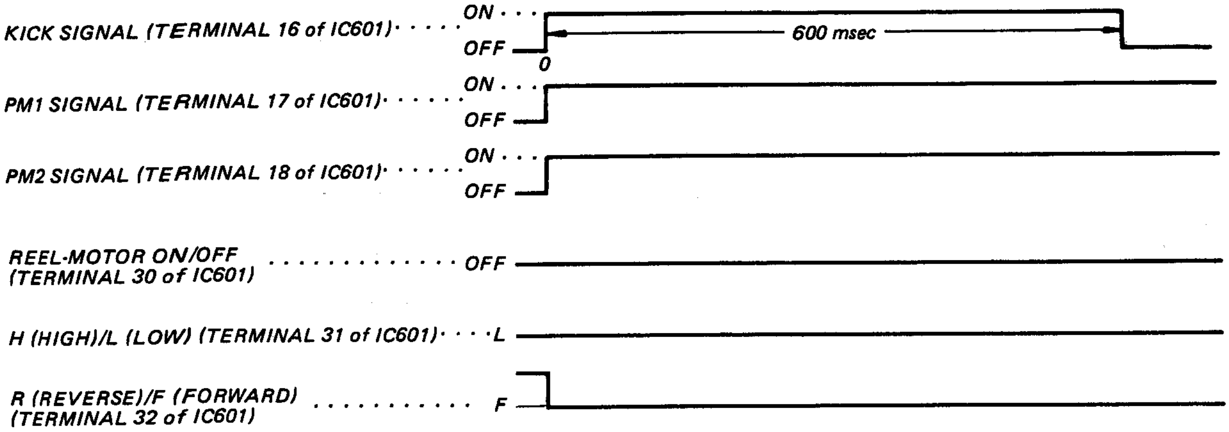


3. A 420 msec pausing time exists when one mode is changed to a different mode except for pause and record modes.

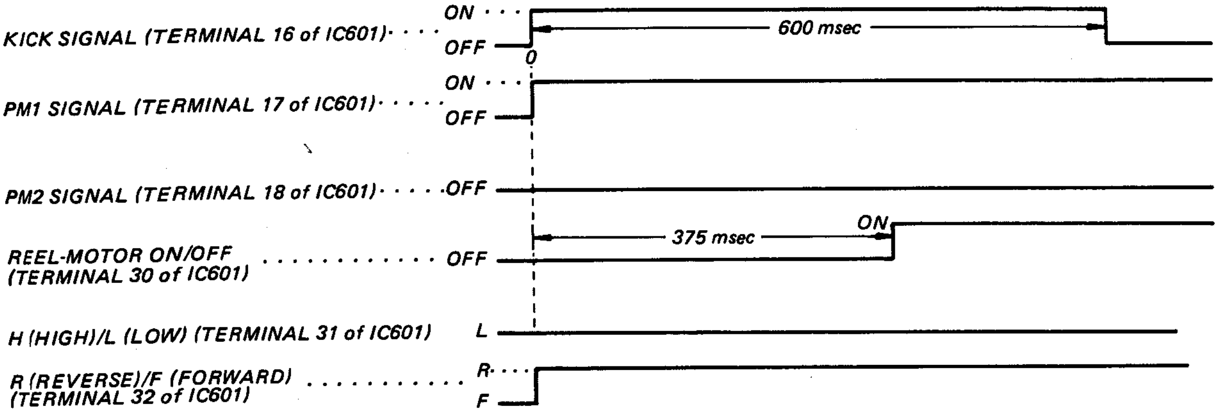
4. **From mechanism stoppage to playback mode:**



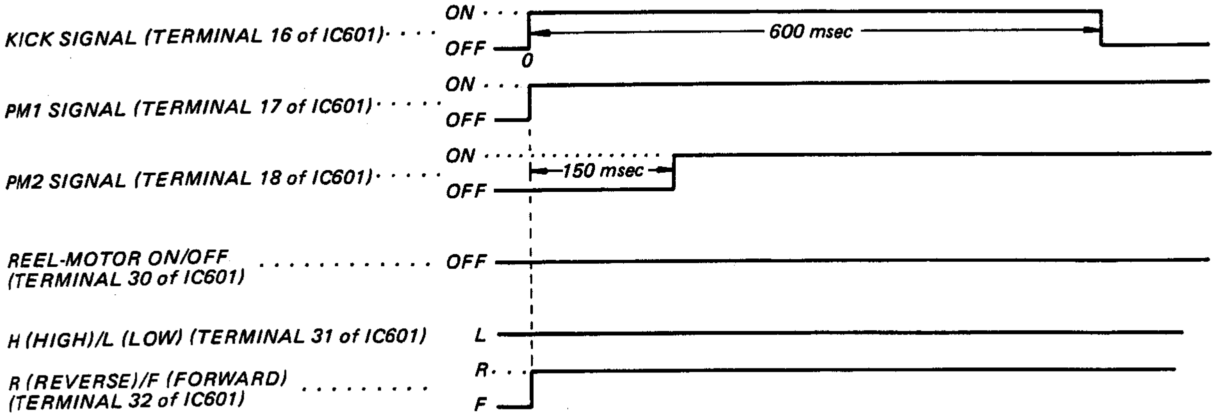
5. From mechanism stoppage to forward pause mode:


KICK SIGNAL (TERMINAL 16 of IC601)
ON
OFF
0
600 msec
PM1 SIGNAL (TERMINAL 17 of IC601)
ON
OFF
PM2 SIGNAL (TERMINAL 18 of IC601)
ON
OFF
REEL-MOTOR ON/OFF (TERMINAL 30 of IC601)
OFF
H (HIGH)/L (LOW) (TERMINAL 31 of IC601)
L
R (REVERSE)/F (FORWARD) (TERMINAL 32 of IC601)
F

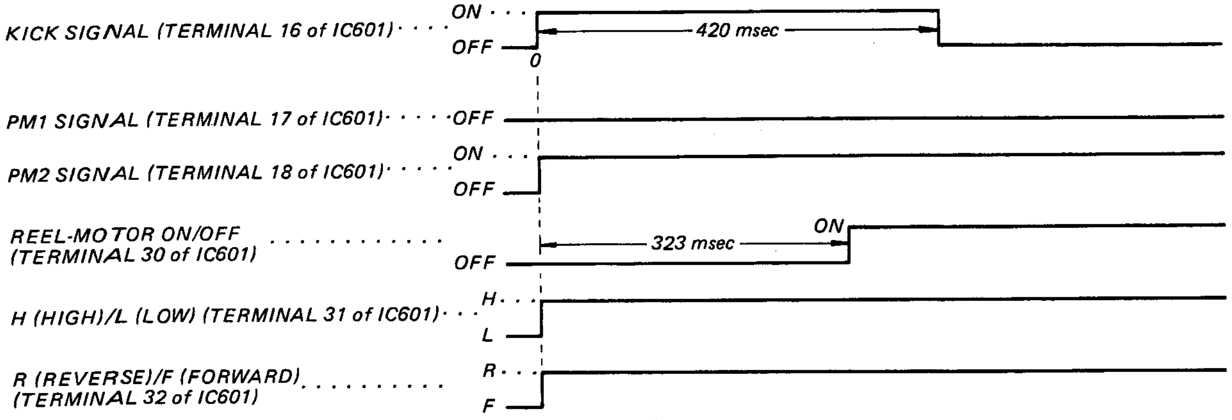
6. From mechanism stoppage to reverse mode:


KICK SIGNAL (TERMINAL 16 of IC601)
ON
OFF
0
600 msec
PM1 SIGNAL (TERMINAL 17 of IC601)
ON
OFF
PM2 SIGNAL (TERMINAL 18 of IC601)
OFF
REEL-MOTOR ON/OFF (TERMINAL 30 of IC601)
OFF
375 msec
ON
H (HIGH)/L (LOW) (TERMINAL 31 of IC601)
L
R (REVERSE)/F (FORWARD) (TERMINAL 32 of IC601)
R
F

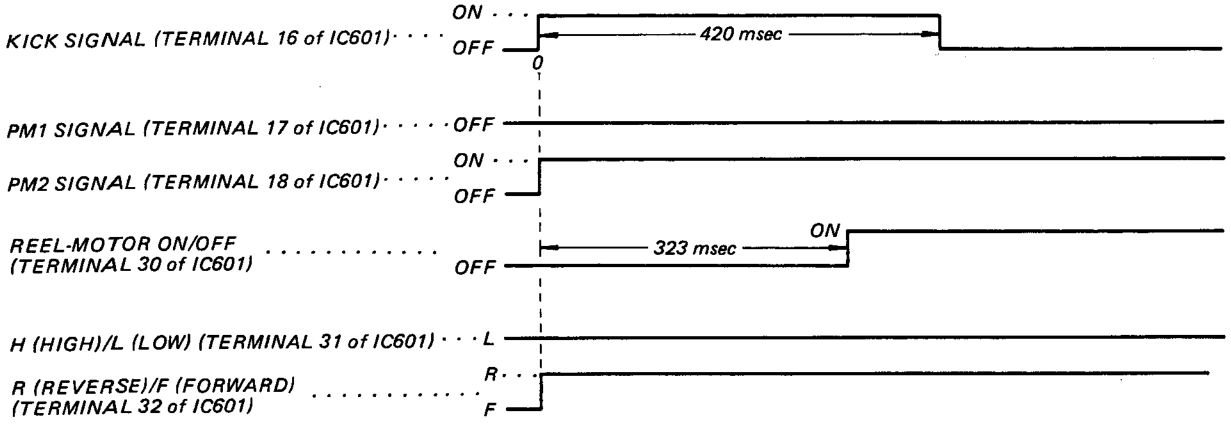
7. From mechanism stoppage to reverse pause mode:


KICK SIGNAL (TERMINAL 16 of IC601)
ON
OFF
0
600 msec
PM1 SIGNAL (TERMINAL 17 of IC601)
ON
OFF
PM2 SIGNAL (TERMINAL 18 of IC601)
ON
OFF
150 msec
REEL-MOTOR ON/OFF (TERMINAL 30 of IC601)
OFF
H (HIGH)/L (LOW) (TERMINAL 31 of IC601)
L
R (REVERSE)/F (FORWARD) (TERMINAL 32 of IC601)
R
F

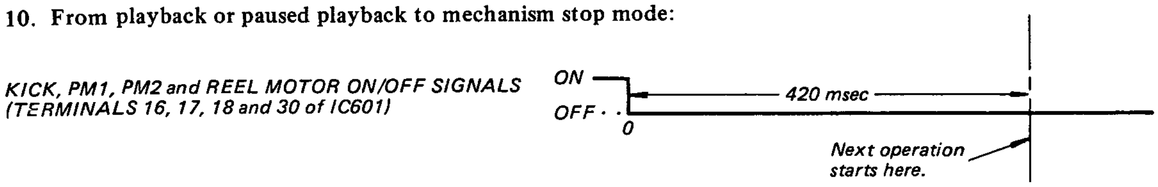
8. Rewind mode:


KICK SIGNAL (TERMINAL 16 of IC601)
ON
OFF
0
420 msec
PM1 SIGNAL (TERMINAL 17 of IC601)
OFF
PM2 SIGNAL (TERMINAL 18 of IC601)
ON
OFF
REEL-MOTOR ON/OFF (TERMINAL 30 of IC601)
323 msec
ON
OFF
H (HIGH)/L (LOW) (TERMINAL 31 of IC601)
H
L
R (REVERSE)/F (FORWARD) (TERMINAL 32 of IC601)
R
F

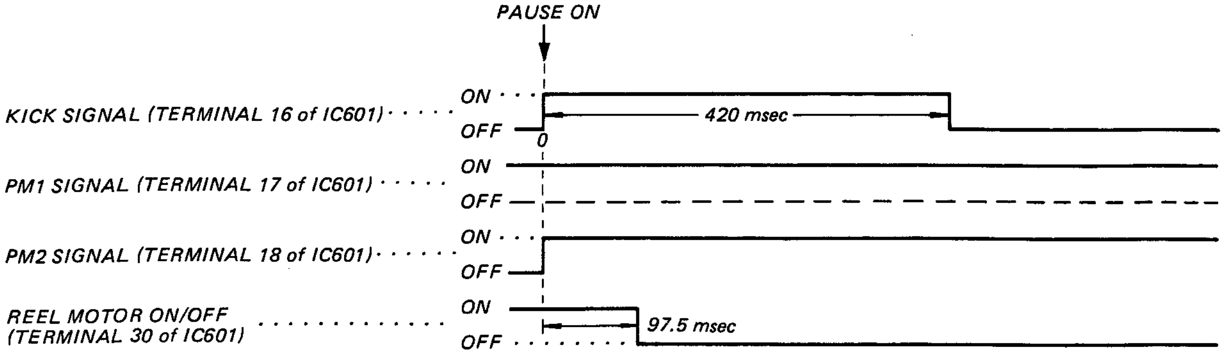
9. Fast-forward mode:


KICK SIGNAL (TERMINAL 16 of IC601)
ON
OFF
0
420 msec
PM1 SIGNAL (TERMINAL 17 of IC601)
OFF
PM2 SIGNAL (TERMINAL 18 of IC601)
ON
OFF
REEL-MOTOR ON/OFF (TERMINAL 30 of IC601)
323 msec
ON
OFF
H (HIGH)/L (LOW) (TERMINAL 31 of IC601)
L
R (REVERSE)/F (FORWARD) (TERMINAL 32 of IC601)
R
F

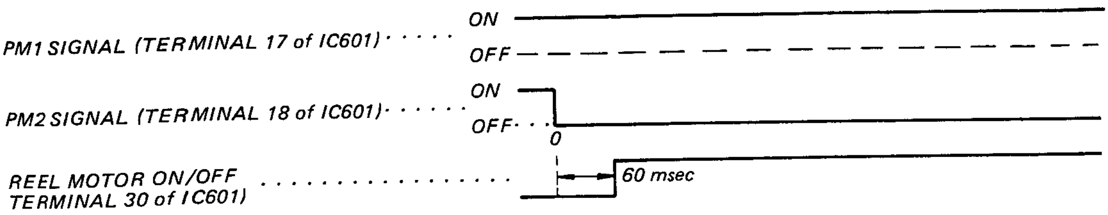
10. From playback or paused playback to mechanism stop mode:


KICK, PM1, PM2 and REEL MOTOR ON/OFF SIGNALS (TERMINALS 16, 17, 18 and 30 of IC601)
ON
OFF
0
420 msec
Next operation starts here.

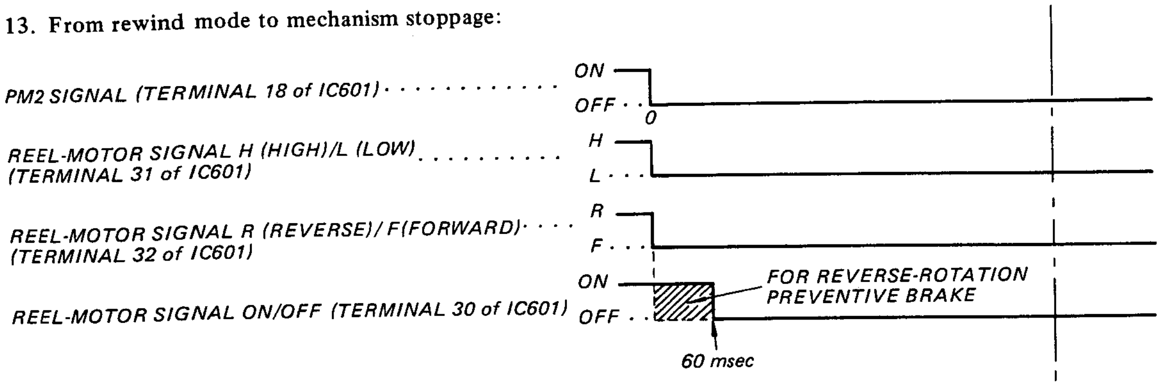
11. Pausing in playback mode:


PAUSE ON
KICK SIGNAL (TERMINAL 16 of IC601)
ON
OFF
0
420 msec
PM1 SIGNAL (TERMINAL 17 of IC601)
ON
OFF
PM2 SIGNAL (TERMINAL 18 of IC601)
ON
OFF
REEL MOTOR ON/OFF (TERMINAL 30 of IC601)
ON
OFF
97.5 msec

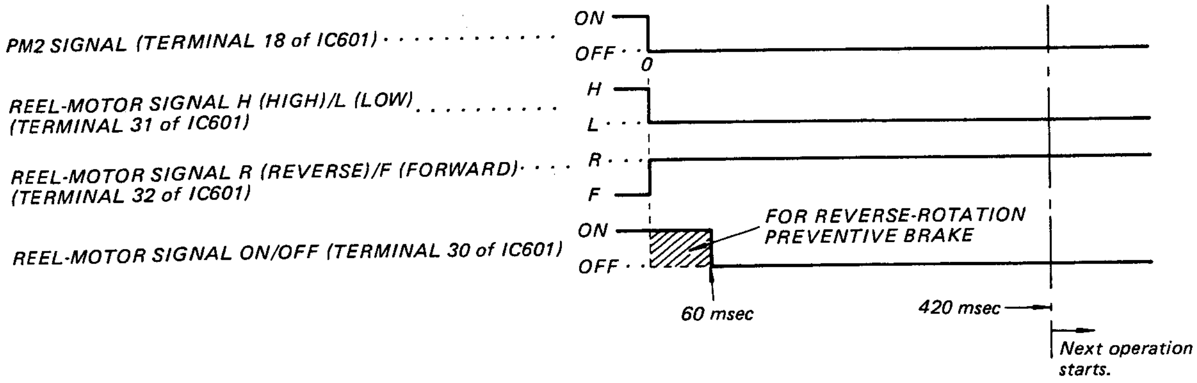
12. When pause in playback mode is released:


PM1 SIGNAL (TERMINAL 17 of IC601)
ON
OFF
PM2 SIGNAL (TERMINAL 18 of IC601)
ON
OFF
0
REEL MOTOR ON/OFF
TERMINAL 30 of IC601)
60 msec

13. From rewind mode to mechanism stoppage:

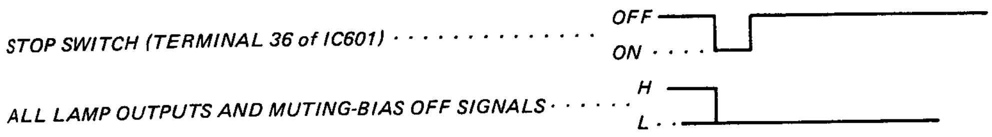

PM2 SIGNAL (TERMINAL 18 of IC601)
ON
OFF
0
REEL-MOTOR SIGNAL H (HIGH)/L (LOW)
(TERMINAL 31 of IC601)
H
L
REEL-MOTOR SIGNAL R (REVERSE)/F(FORWARD)
(TERMINAL 32 of IC601)
R
F
REEL-MOTOR SIGNAL ON/OFF (TERMINAL 30 of IC601)
ON
OFF
FOR REVERSE-ROTATION
PREVENTIVE BRAKE
60 msec

14. From fast-forward mode to mechanism stoppage:

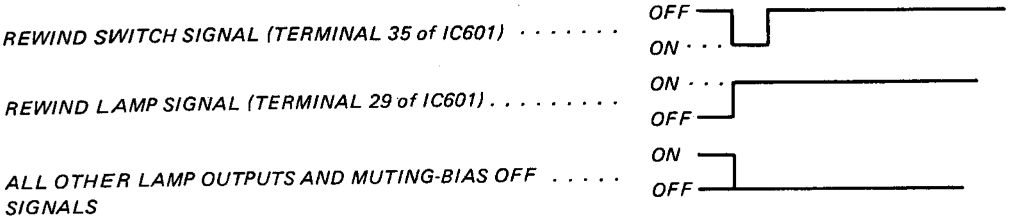

PM2 SIGNAL (TERMINAL 18 of IC601)
ON
OFF
0
REEL-MOTOR SIGNAL H (HIGH)/L (LOW)
(TERMINAL 31 of IC601)
H
L
REEL-MOTOR SIGNAL R (REVERSE)/F (FORWARD)
(TERMINAL 32 of IC601)
R
F
REEL-MOTOR SIGNAL ON/OFF (TERMINAL 30 of IC601)
ON
OFF
FOR REVERSE-ROTATION
PREVENTIVE BRAKE
60 msec
420 msec
Next operation
starts.

LAMP OUTPUTS, MUTING ON/OFF AND BIAS ON/OFF

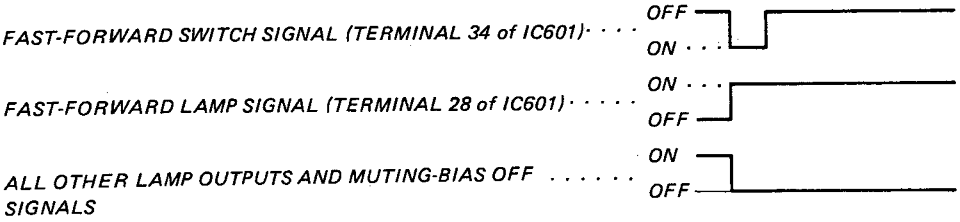
15. When stop switch is turned ON:


STOP SWITCH (TERMINAL 36 of IC601)
OFF
ON
ALL LAMP OUTPUTS AND MUTING-BIAS OFF SIGNALS
H
L

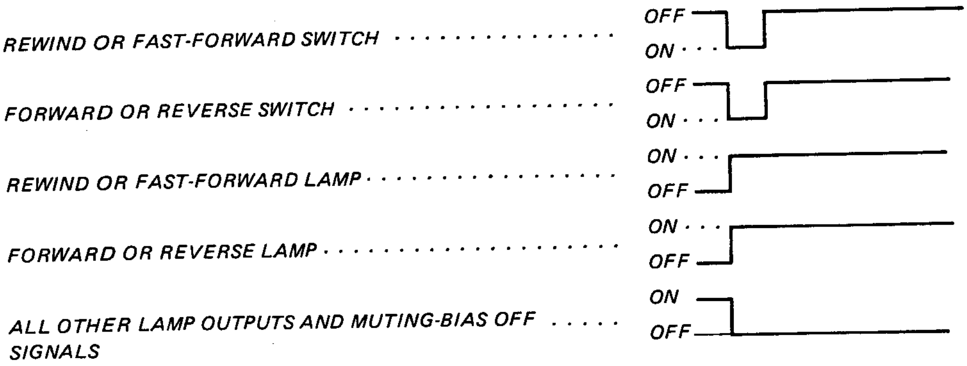
16. When rewind switch is turned ON:


REWIND SWITCH SIGNAL (TERMINAL 35 of IC601)
OFF
ON
REWIND LAMP SIGNAL (TERMINAL 29 of IC601)
ON
OFF
ALL OTHER LAMP OUTPUTS AND MUTING-BIAS OFF SIGNALS
ON
OFF

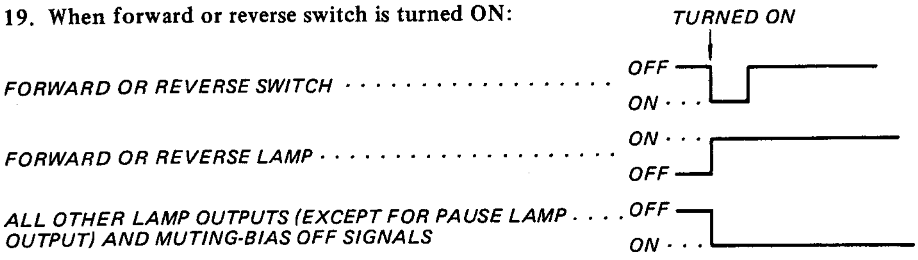
17. When fast-forward switch is turned on:


FAST-FORWARD SWITCH SIGNAL (TERMINAL 34 of IC601)
OFF
ON
FAST-FORWARD LAMP SIGNAL (TERMINAL 28 of IC601)
ON
OFF
ALL OTHER LAMP OUTPUTS AND MUTING-BIAS OFF SIGNALS
ON
OFF

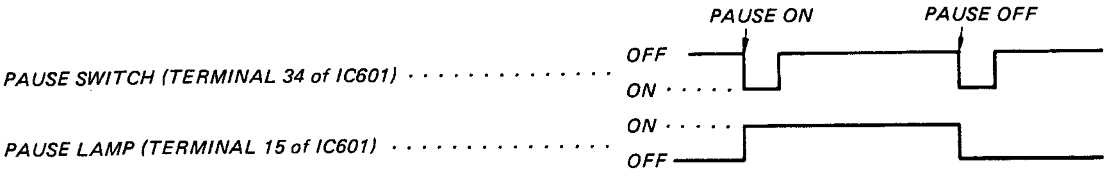
18. When (rewind or fast-forward) and (forward or reverse) switches are turned ON:


REWIND OR FAST-FORWARD SWITCH
OFF
ON
FORWARD OR REVERSE SWITCH
OFF
ON
REWIND OR FAST-FORWARD LAMP
ON
OFF
FORWARD OR REVERSE LAMP
ON
OFF
ALL OTHER LAMP OUTPUTS AND MUTING-BIAS OFF SIGNALS
ON
OFF

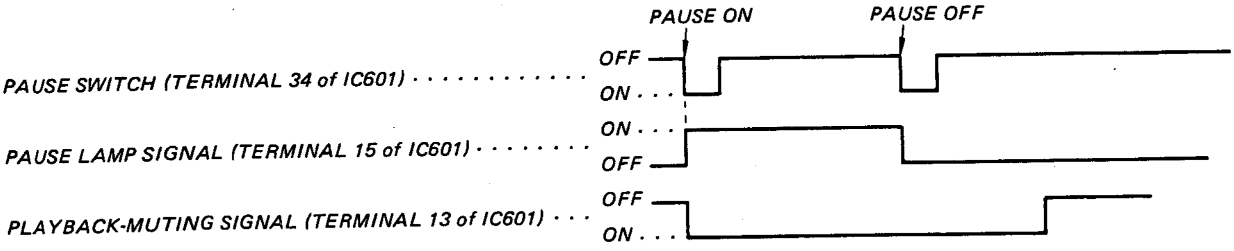
19. When forward or reverse switch is turned ON:


TURNED ON
FORWARD OR REVERSE SWITCH
OFF
ON
FORWARD OR REVERSE LAMP
ON
OFF
ALL OTHER LAMP OUTPUTS (EXCEPT FOR PAUSE LAMP OUTPUT) AND MUTING-BIAS OFF SIGNALS
OFF
ON

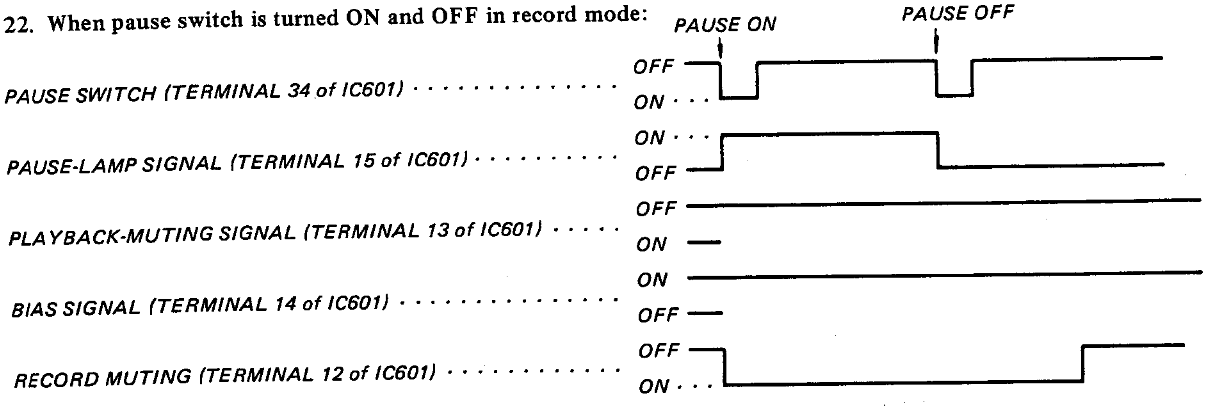
20. When pause switch is turned ON and OFF in all modes other than playback:


PAUSE ON
PAUSE OFF
PAUSE SWITCH (TERMINAL 34 of IC601)
OFF
ON
PAUSE LAMP (TERMINAL 15 of IC601)
ON
OFF

21. When pause switch is turned ON and OFF in playback mode:

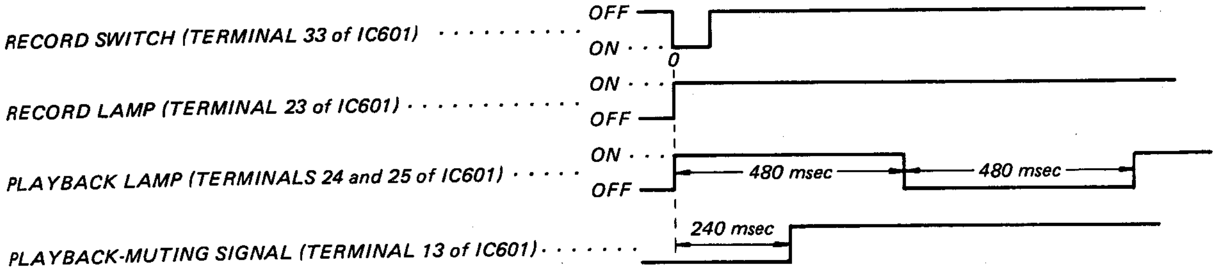

PAUSE ON
PAUSE OFF
PAUSE SWITCH (TERMINAL 34 of IC601)
OFF
ON
PAUSE LAMP SIGNAL (TERMINAL 15 of IC601)
ON
OFF
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)
OFF
ON

22. When pause switch is turned ON and OFF in record mode:

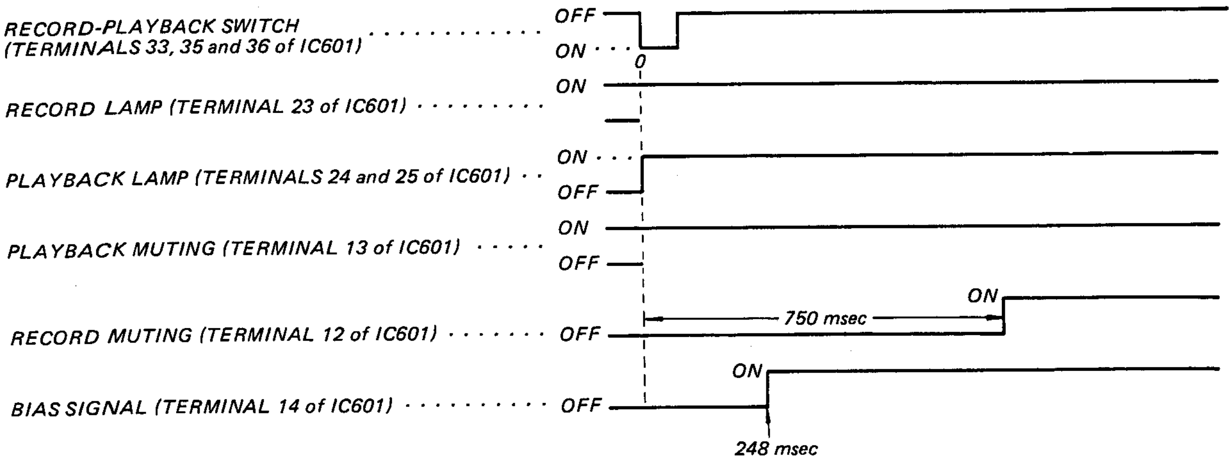

PAUSE ON
PAUSE OFF
PAUSE SWITCH (TERMINAL 34 of IC601)
OFF
ON
PAUSE-LAMP SIGNAL (TERMINAL 15 of IC601)
ON
OFF
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)
OFF
ON
BIAS SIGNAL (TERMINAL 14 of IC601)
ON
OFF
RECORD MUTING (TERMINAL 12 of IC601)
OFF
ON

WHEN MUTING AND BIAS ARE TURNED ON

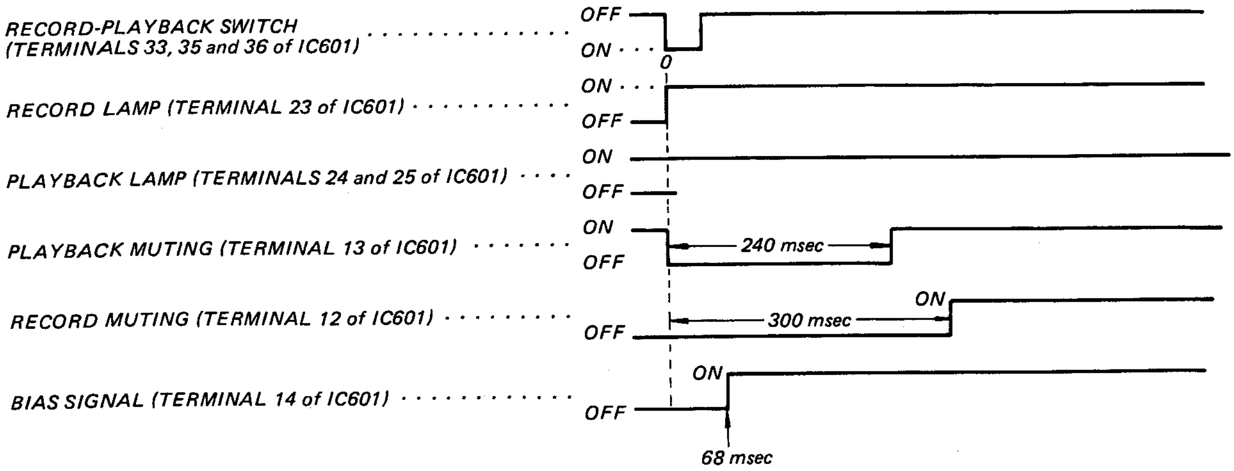
23. When record switch is turned on in all modes except for playback:


RECORD SWITCH (TERMINAL 33 of IC601)
OFF
ON
0
RECORD LAMP (TERMINAL 23 of IC601)
ON
OFF
PLAYBACK LAMP (TERMINALS 24 and 25 of IC601)
ON
OFF
480 msec
480 msec
240 msec
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)

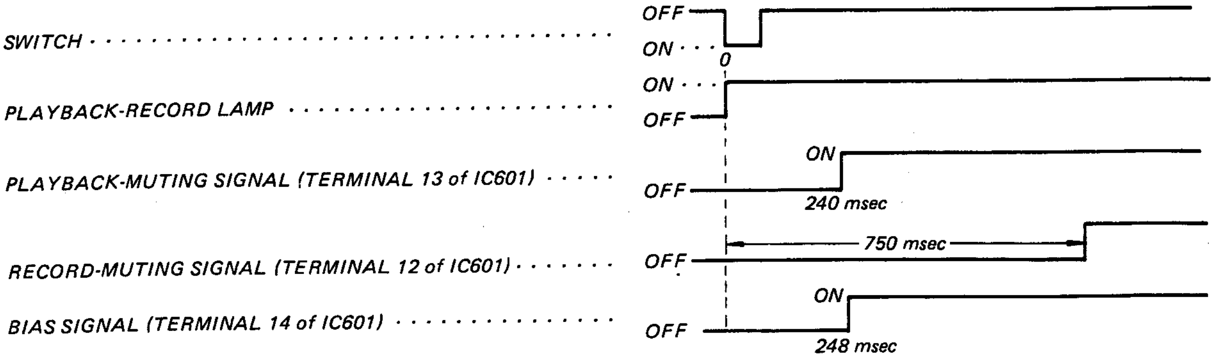
24. When record-playback switch is turned ON during record mode:


RECORD-PLAYBACK SWITCH (TERMINALS 33, 35 and 36 of IC601)
OFF
ON
0
RECORD LAMP (TERMINAL 23 of IC601)
ON
PLAYBACK LAMP (TERMINALS 24 and 25 of IC601)
ON
OFF
PLAYBACK MUTING (TERMINAL 13 of IC601)
ON
OFF
RECORD MUTING (TERMINAL 12 of IC601)
OFF
ON
750 msec
BIAS SIGNAL (TERMINAL 14 of IC601)
OFF
ON
248 msec

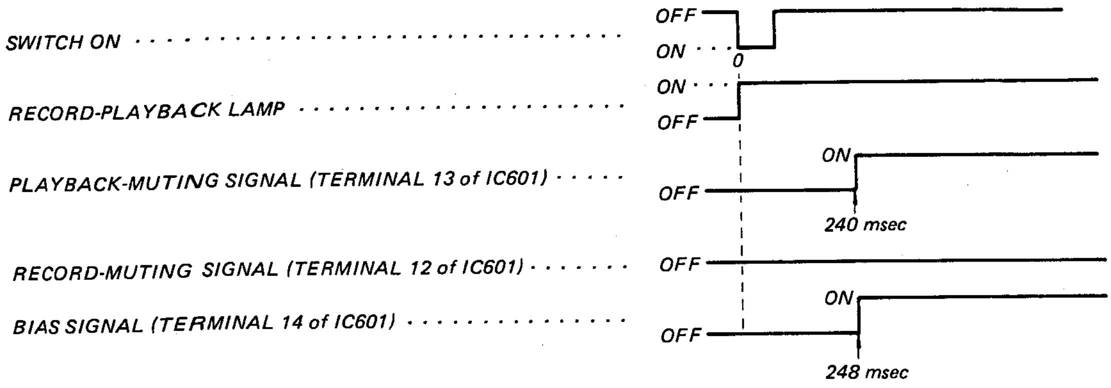
25. When record-playback switch is turned ON during playback mode:


RECORD-PLAYBACK SWITCH (TERMINALS 33, 35 and 36 of IC601)
OFF
ON
0
RECORD LAMP (TERMINAL 23 of IC601)
ON
OFF
PLAYBACK LAMP (TERMINALS 24 and 25 of IC601)
ON
OFF
PLAYBACK MUTING (TERMINAL 13 of IC601)
ON
OFF
240 msec
RECORD MUTING (TERMINAL 12 of IC601)
OFF
ON
300 msec
BIAS SIGNAL (TERMINAL 14 of IC601)
OFF
ON
68 msec

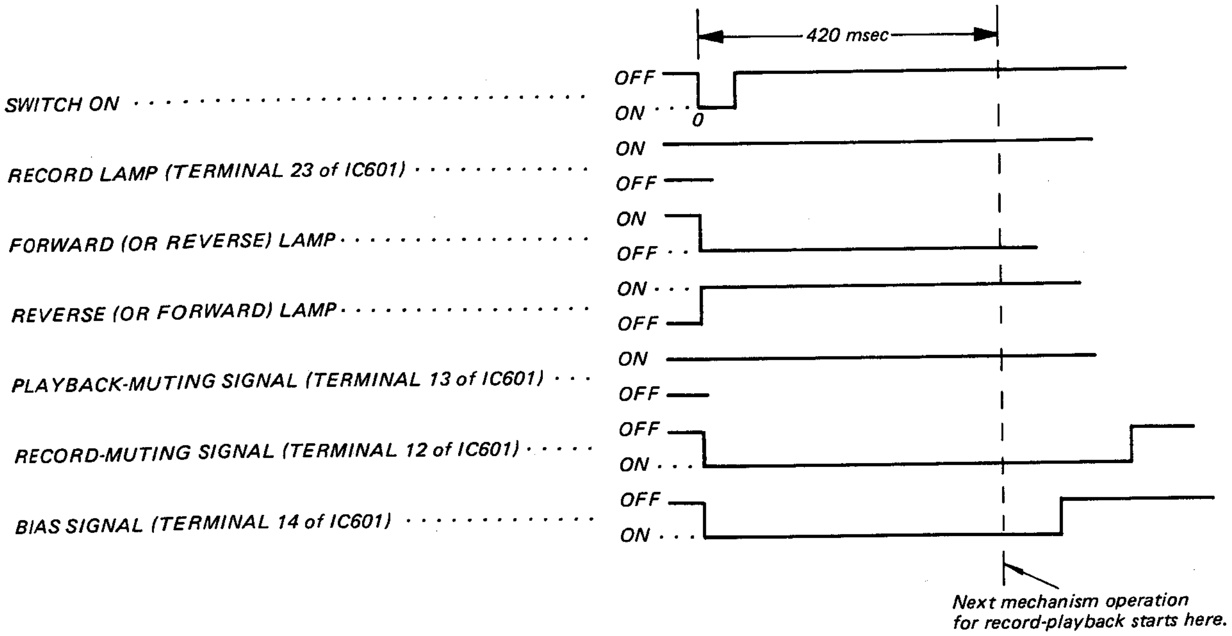
26. From stop to record-play mode:


SWITCH
OFF
ON
0
PLAYBACK-RECORD LAMP
ON
OFF
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)
OFF
ON
240 msec
RECORD-MUTING SIGNAL (TERMINAL 12 of IC601)
OFF
750 msec
BIAS SIGNAL (TERMINAL 14 of IC601)
OFF
ON
248 msec

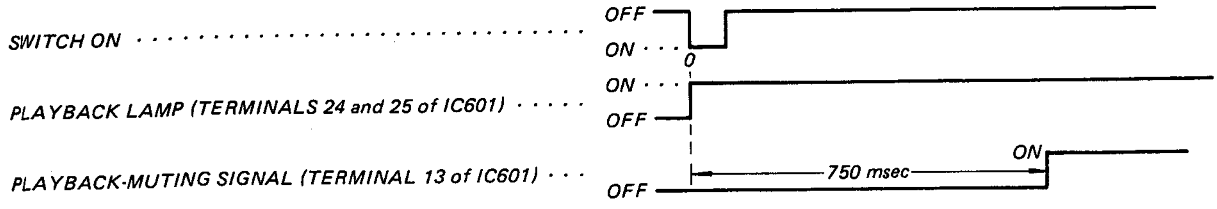
27. From stop to record-playback pause mode:


SWITCH ON
OFF
ON
0
RECORD-PLAYBACK LAMP
ON
OFF
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)
ON
OFF
240 msec
RECORD-MUTING SIGNAL (TERMINAL 12 of IC601)
OFF
BIAS SIGNAL (TERMINAL 14 of IC601)
ON
OFF
248 msec

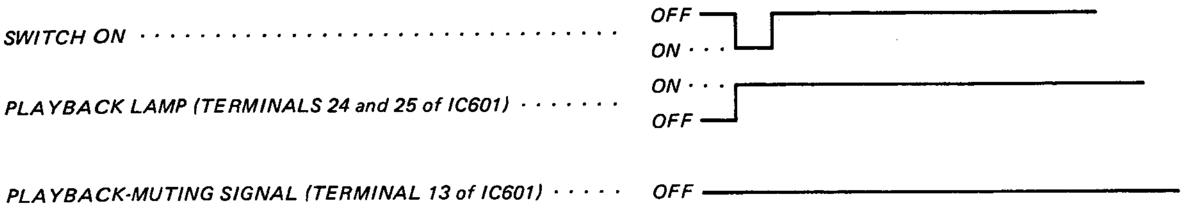
28. From forward-record to reverse-record mode and vice versa:


420 msec
SWITCH ON
OFF
ON
0
RECORD LAMP (TERMINAL 23 of IC601)
ON
OFF
FORWARD (OR REVERSE) LAMP
ON
OFF
REVERSE (OR FORWARD) LAMP
ON
OFF
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)
ON
OFF
RECORD-MUTING SIGNAL (TERMINAL 12 of IC601)
OFF
ON
BIAS SIGNAL (TERMINAL 14 of IC601)
OFF
ON
Next mechanism operation
for record-playback starts here.

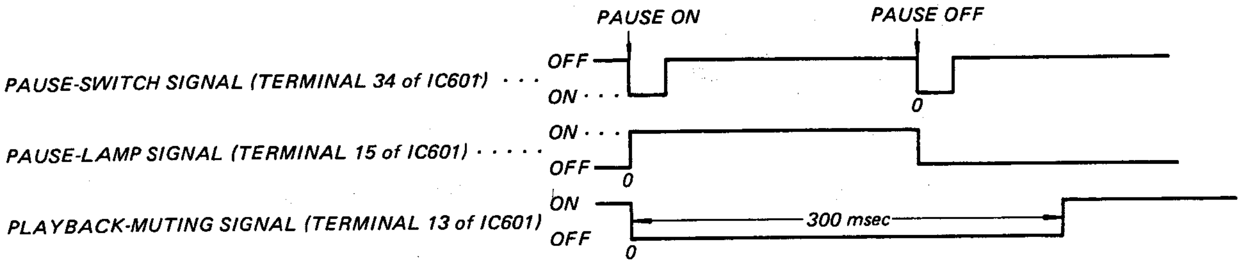
29. From stop to playback mode:


SWITCH ON
OFF
ON
0
PLAYBACK LAMP (TERMINALS 24 and 25 of IC601)
ON
OFF
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)
ON
OFF
750 msec

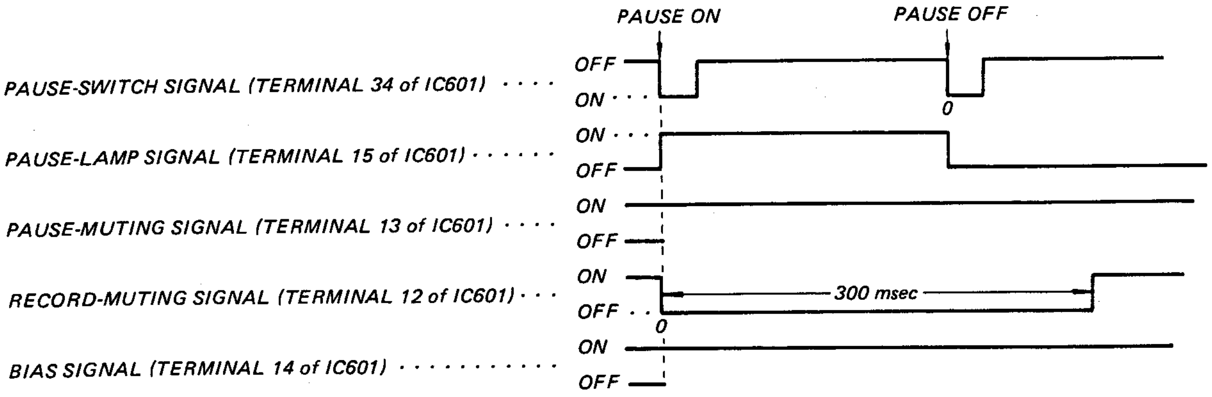
30. From pause to playback pause mode:


SWITCH ON
OFF
ON
PLAYBACK LAMP (TERMINALS 24 and 25 of IC601)
ON
OFF
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)
OFF

31. When pause switch is turned ON and OFF during playback mode:


PAUSE ON
PAUSE OFF
PAUSE-SWITCH SIGNAL (TERMINAL 34 of IC601)
OFF
ON
0
PAUSE-LAMP SIGNAL (TERMINAL 15 of IC601)
ON
OFF
0
PLAYBACK-MUTING SIGNAL (TERMINAL 13 of IC601)
ON
OFF
0
300 msec

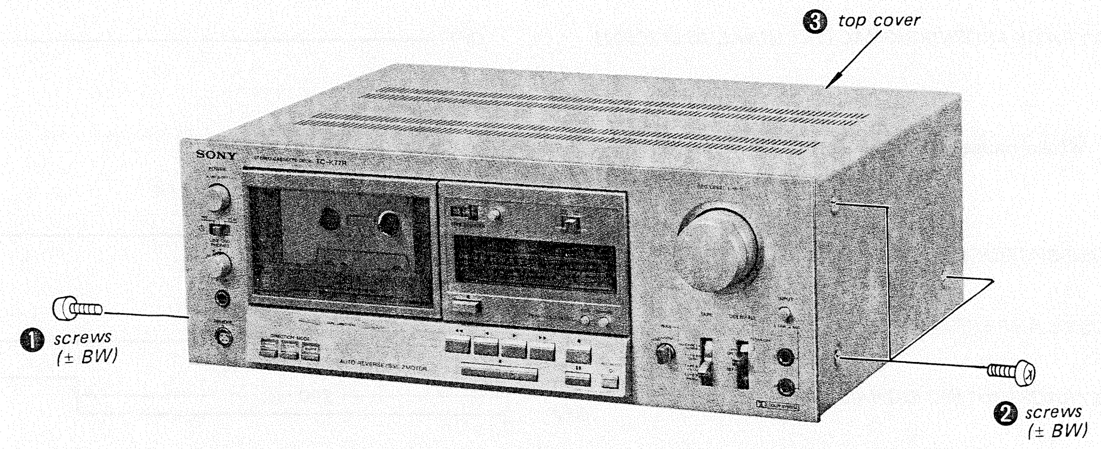
32. When pause switch is turned ON and OFF during record-playback mode:


PAUSE ON
PAUSE OFF
PAUSE-SWITCH SIGNAL (TERMINAL 34 of IC601)
OFF
ON
0
PAUSE-LAMP SIGNAL (TERMINAL 15 of IC601)
ON
OFF
PAUSE-MUTING SIGNAL (TERMINAL 13 of IC601)
ON
OFF
RECORD-MUTING SIGNAL (TERMINAL 12 of IC601)
ON
OFF
0
300 msec
BIAS SIGNAL (TERMINAL 14 of IC601)
ON
OFF

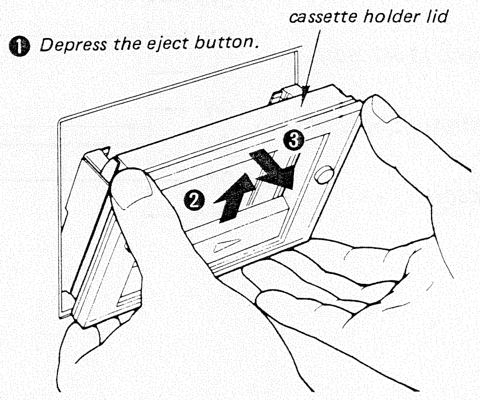
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

TOP COVER

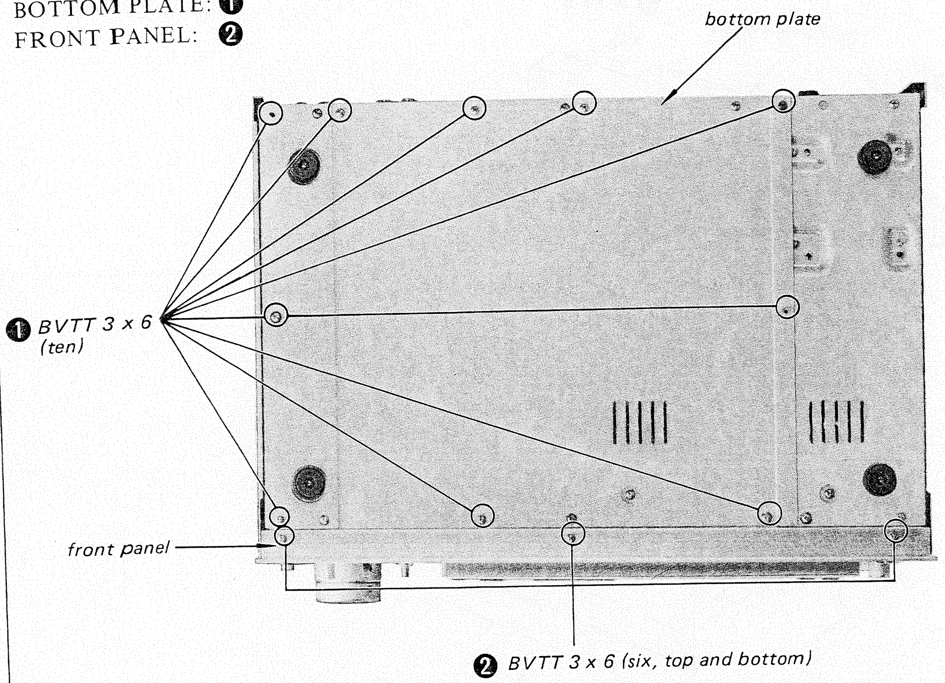

❸ top cover
❶ screws (± BW)
❷ screws (± BW)
SONY
TC-K77R
AUTO REVERSE / DISC 2MOTOR

CASSETTE HOLDER LID


cassette holder lid
❶ Depress the eject button.
❷
❸

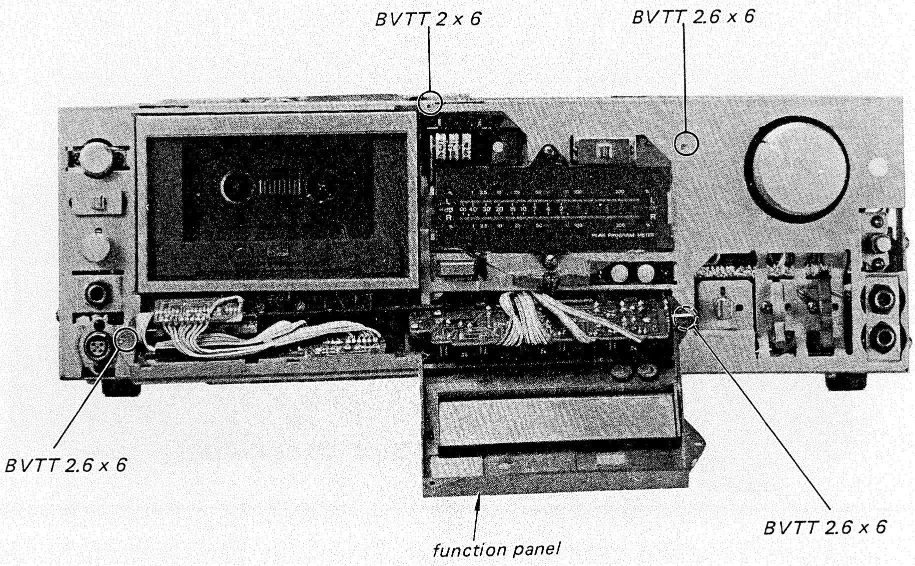
BOTTOM PLATE AND FRONT PANEL

BOTTOM PLATE: ❶
FRONT PANEL: ❷

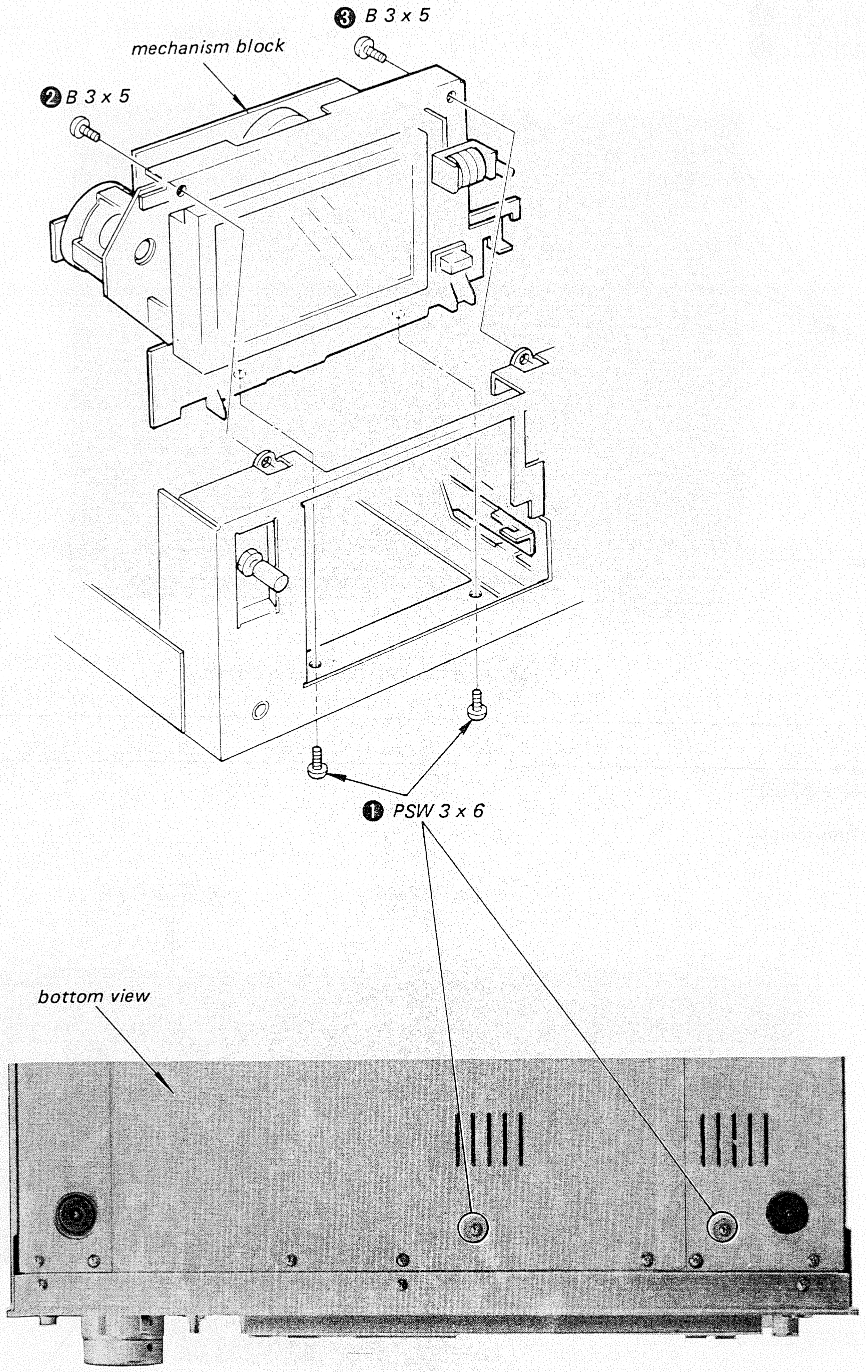

bottom plate
❶ BVTT 3 x 6 (ten)
front panel
❷ BVTT 3 x 6 (six, top and bottom)

FUNCTION PANEL

Remove four screws.


BVTT 2 x 6
BVTT 2.6 x 6
BVTT 2.6 x 6
function panel
BVTT 2.6 x 6

MECHANISM BLOCK REMOVAL


❸ B 3 x 5
mechanism block
❷ B 3 x 5
❶ PSW 3 x 6
bottom view

SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

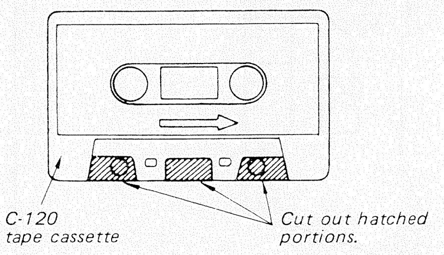
PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   - record/playback head
   - erase head
   - capstan
   - pinch roller
   - rubber belts
   - idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

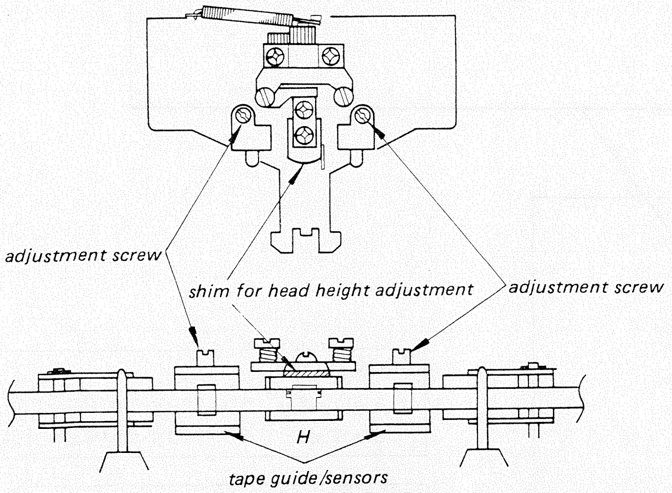
Head Height Adjustment

– Playback Mode –

1. Prepare an adjustment cassette as shown below.

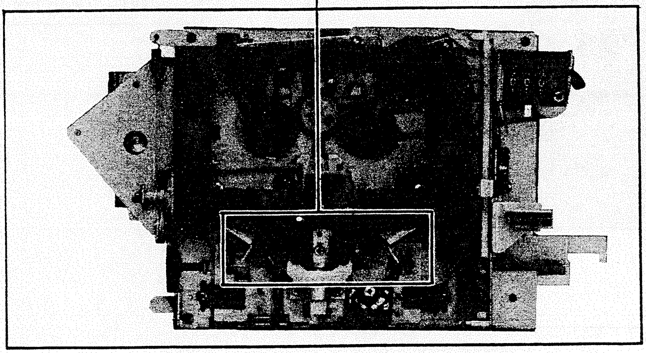

C-120
tape cassette
Cut out hatched
portions.

2. To eliminate tape curl and tape twist in FWD and REV modes, adjust the heights of tape guide/sensors by turning the adjustment screws or inserting the shim as shown.
3. After the adjustments, apply suitable locking compound to the adjustment screws.


adjustment screw
shim for head height adjustment
adjustment screw
H
tape guide/sensors

Shim, head height adjustment

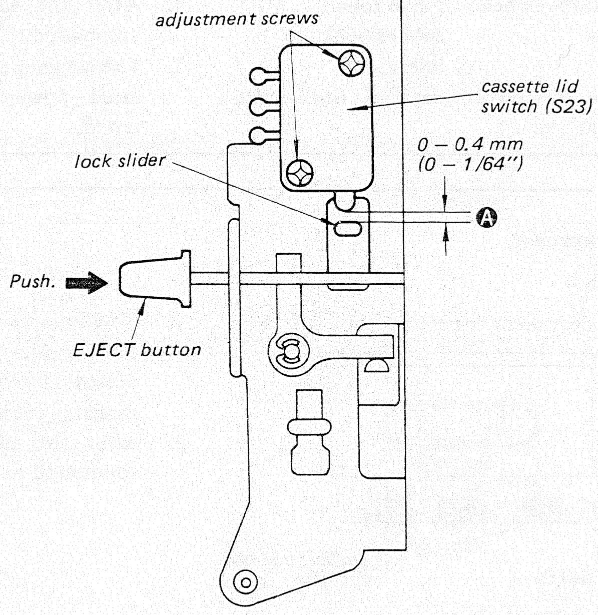
3-558-328-01	*t = 0.1*
3-558-328-11	*t = 0.2*
3-558-328-21	*t = 0.15*

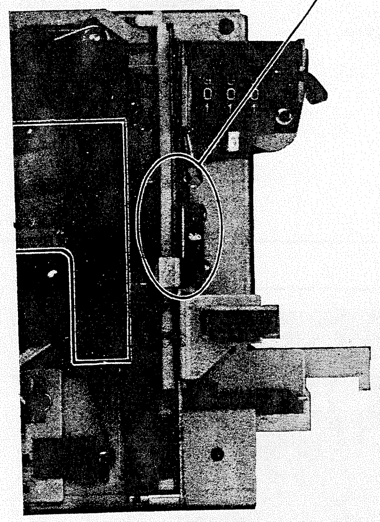


Cassette Lid Switch (S23) Position Adjustment

– Stop Mode –

Adjust the cassette lid switch position so that the clearance Ⓐ is 0 – 0.4 mm (0 – 1/64") when the cassette lid is opened by pushing EJECT button.


adjustment screws
cassette lid switch (S23)
0 – 0.4 mm (0 – 1/64")
lock slider
Ⓐ
Push.
EJECT button



Brake Torque

Tight side:	50–200 g·cm (0.7–2.8 oz·inch)
Slack side:	20–100 g·cm (0.28–1.4 oz·inch)

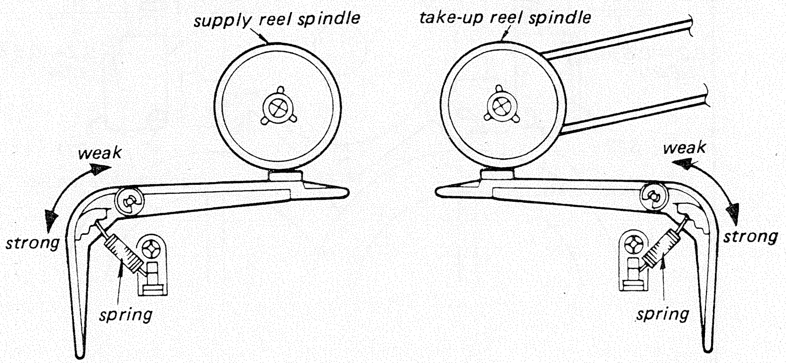
Pinch Roller Pressure

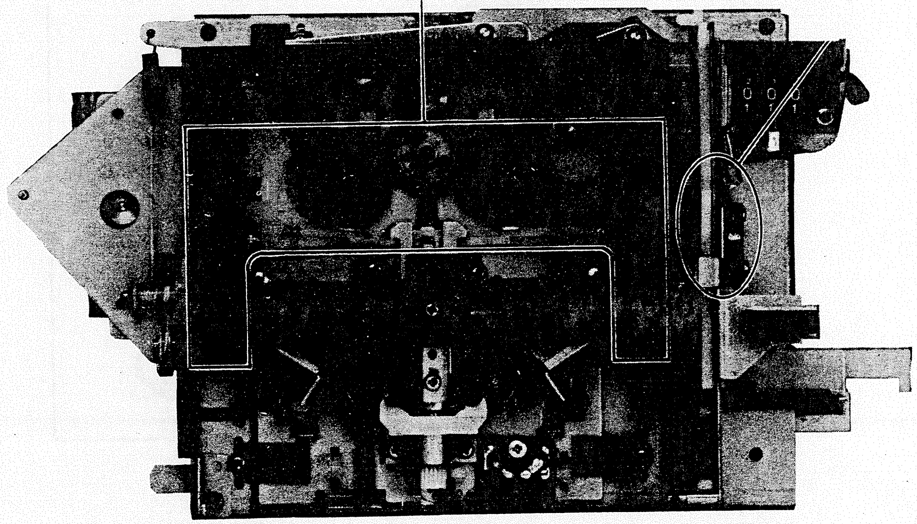
400–500 g.cm (5.56–6.95 oz·inch)

Back Tension Torque Adjustment

1. Install the torque meter CQ-102A and measure the back tension torque in FWD mode.
   Install the torque meter CQ-101A and measure the back tension torque in REV mode.
2. To meet the specified torque, change the hook position of the spring.

   Specification: 3–4.5 g·cm

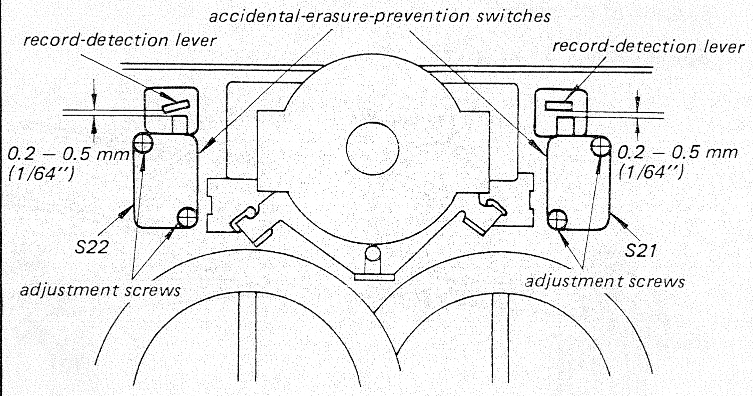

supply reel spindle
take-up reel spindle
weak
strong
spring
weak
strong
spring

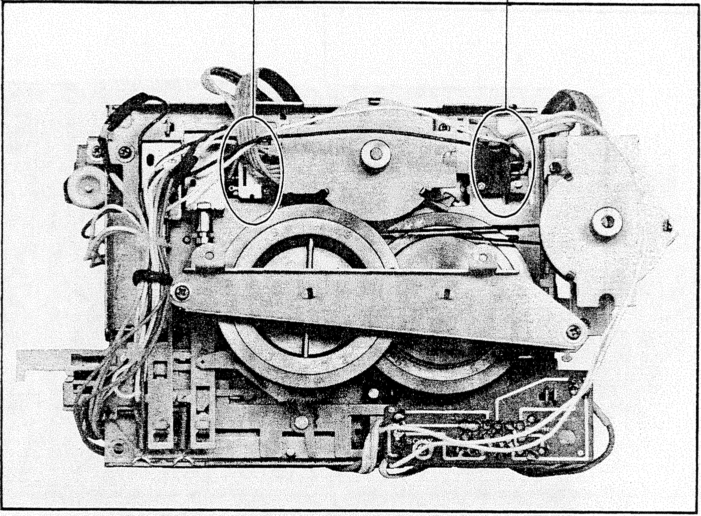


Accidental-Erasure-Prevention Switches (S21, S22) Position Adjustment

– Stop Mode –

1. Install a cassette with an erasure-proof tab.
2. adjust the erasure prevention switch positons so that the clearance between record-detection lever and the erasure prevention switches is 0.2 – 0.5 mm (1/64").

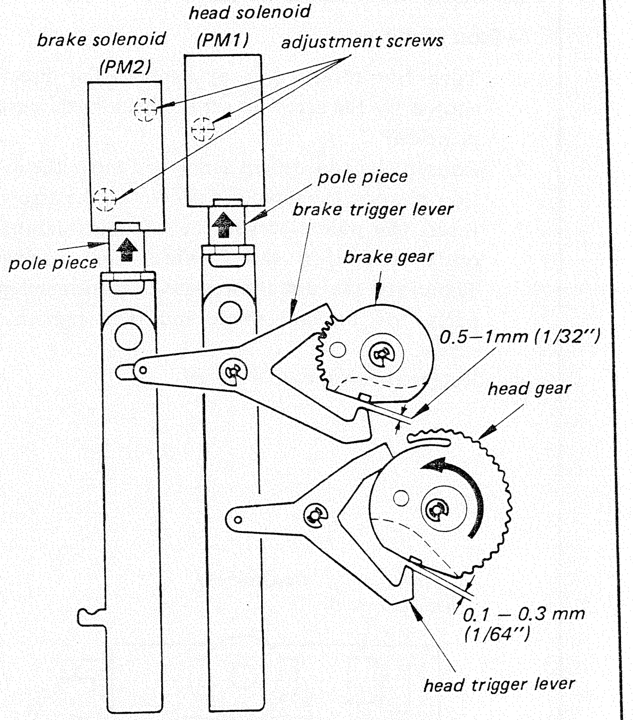

accidental-erasure-prevention switches
record-detection lever
record-detection lever
0.2 – 0.5 mm
(1/64")
0.2 – 0.5 mm
(1/64")
S22
S21
adjustment screws
adjustment screws

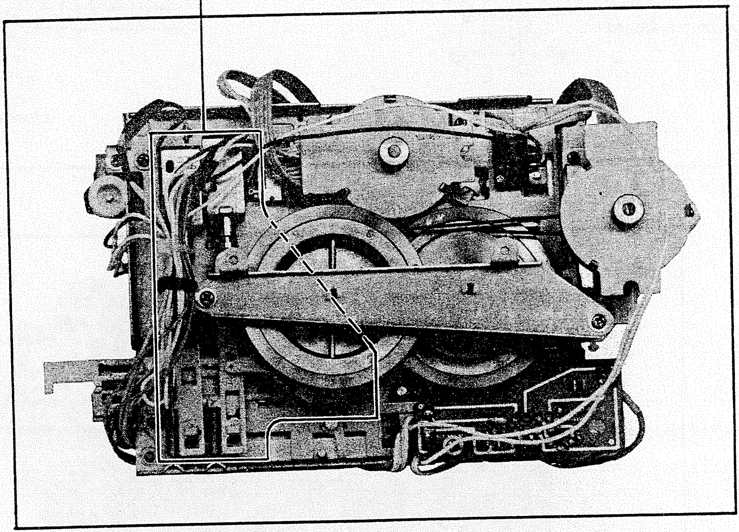


Solenoid (PM 1, 2) Position Adjustment

– Stop Mode –

1. Insert the pole piece of the head solenoid PM1 in the direction shown by the arrow.
2. Adjust the position of the head solenoid so that the clearance between the head gear and the head trigger lever is 0.1 – 0.3 mm.
3. Release the pole piece of the head solenoid.
4. Insert the pole piece of the brake solenoid PM2 in the direction shown by the arrow.
5. Adjust the position of the brake solenoid so that the clearance between the brake gear and the brake trigger lever is 0.5 – 1 mm (1/32").
6. Release the plunger of the brake solenoid.

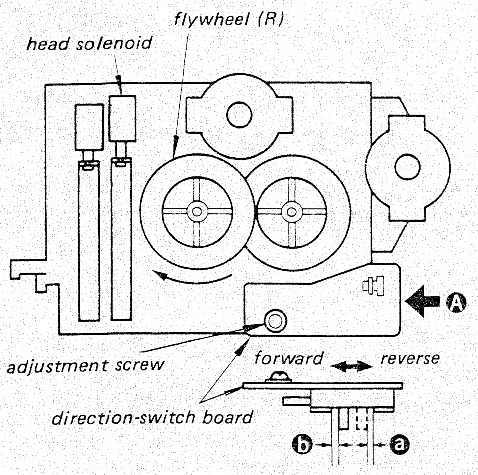

head solenoid
(PM1)
brake solenoid
(PM2)
adjustment screws
pole piece
brake trigger lever
pole piece
brake gear
0.5–1mm (1/32")
head gear
0.1 – 0.3 mm
(1/64")
head trigger lever

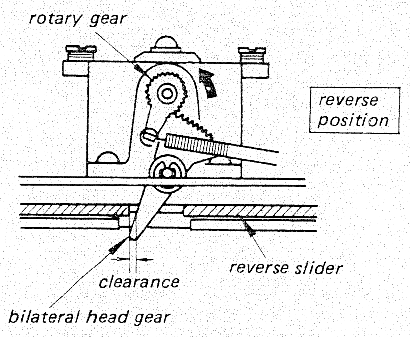


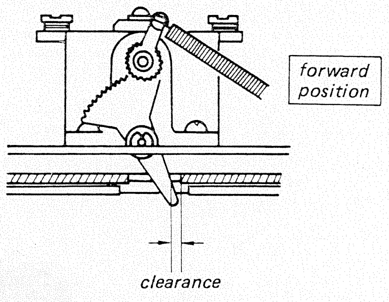
Direction Plate Positoin Adjustment

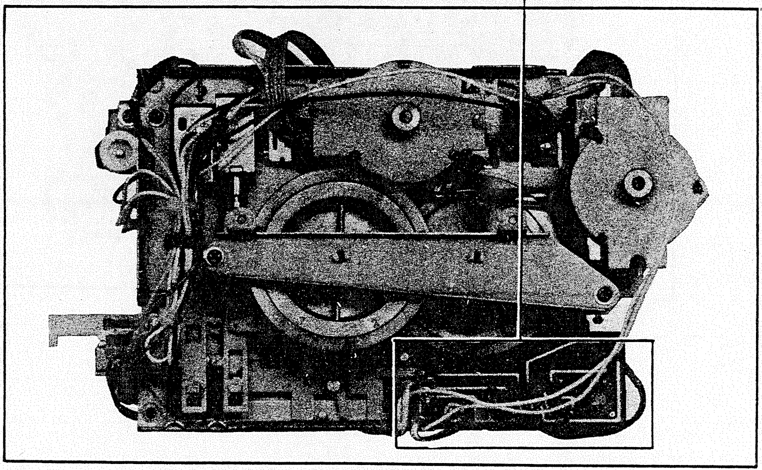
– Stop Mode –

1. Turn the rotary gear by hand in the direction shown by the arrow to set the head in the reverse position.
2. Loosen the adjustment screw and move the direction plate in the direction shown by the arrowⒶ.
3. Insert the pole pieces in the solenoids simultaneously and turn the flywheel (R) clockwise. Therefore the direction plate is positioned properly for forward mode and then tighten the screw.
4. Release both the pole pieces.
5. Insert the pole piece in the head solenoid and turn the flywheel in the direction shown by the arrow until the head sets in the reverse position. At this moment, make sure that the clearance ⓐ is less than 1.5 mm (1/16") and there is a clearance between the bilateral-head gear and the reverse slider.
6. Make the forward mode in the same manner as mentioned in step 3 and confirm that the clearance ⓑ is 0 – 0.5 mm (0 – 1/64") and there is a clearance between the bilateral head gear and the reverse slider.


flywheel (R)
head solenoid
Ⓐ
adjustment screw
forward
reverse
direction-switch board
ⓑ
ⓐ


rotary gear
reverse position
clearance
reverse slider
bilateral head gear


forward position
clearance



3-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual.
The adjustments should be performed for both L-CH and R-CH.

BIAS and TAPE switch settings in accordance with tape used are as follows.

Tape	BIAS switch	TAPE switch
CS-10	NORM	I (NORMAL)
CS-25	NORM	II (CrO_2)
CS-30	NORM	III (Fe-Cr)
CS-40	NORM	IV (METAL)

Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch:	OFF
TAPE (EQ) switch:	NORM
BIAS switch:	NORM
LINE OUT/PHONES LEVEL:	"0" (fully clockwise)
TIMER switch:	OFF
MEMORY switch:	OFF
REC MUTE switch:	OFF
DIRECTION MODE switch:	–

Standard Record:

Supply the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	MIC	LINE IN
source impedance	300 Ω	10 kΩ
input level	−60 dB (0.775 mV)	−10 dB (0.25 V)

Standard Output Level

	LINE OUT FIXED	HEADPHONES
load impedance	47 kΩ	8 Ω
output level	− 5 dB (0.44 V)	

Table 1. Torques and Tape Speed vs. Ambient Temperature

Ambient Temperature	Normal or Reverse Forward Torque	Normal or Reverse Fast-Forward Torque	Tape Speed
−3 to 3 °C (27 to 37 °F)	60 to 70 g·cm (0.84 to 0.97 oz·inch)	195 to 215 g·cm (2.71 to 2.98 oz·inch)	2990 ± 10 Hz
2 to 8 °C (36 to 46 °F)	56 to 66 g·cm (0.78 to 0.91 oz·inch)	190 to 210 g·cm (2.65 to 2.91 oz·inch)	2992 ± 10 Hz
7 to 13 °C (45 to 55 °F)	52 to 62 g·cm (0.73 to 0.86 oz·inch)	185 to 205 g·cm (2.57 to 2.84 oz·inch)	2994 ± 10 Hz
12 to 18 °C (54 to 65 °F)	48 to 58 g·cm (0.67 to 0.80 oz·inch)	180 to 200 g·cm (2.50 to 2.77 oz·inch)	2996 ± 10 Hz
17 to 23 °C (63 to 73 °F)	44 to 54 g·cm (0.62 to 0.75 oz·inch)	175 to 195 g·cm (2.43 to 2.75 oz·inch)	2998 ± 10 Hz
22 to 28 °C (72 to 83 °F)	40 to 50 g·cm (0.56 to 0.69 oz·inch)	170 to 190 g·cm (2.37 to 2.64 oz·inch)	3000 ± 10 Hz
27 to 33 °C (81 to 92 °F)	37 to 47 g·cm (0.52 to 0.65 oz·inch)	165 to 185 g·cm (2.30 to 2.57 oz·inch)	3002 ± 10 Hz
32 to 38 °C (90 to 100 °F)	34 to 54 g·cm (0.48 to 0.75 oz·inch)	160 to 180 g·cm (2.23 to 2.50 oz·inch)	3004 ± 10 Hz
37 to 43 °C (99 to 109 °F)	31 to 41 g·cm (0.43 to 0.56 oz·inch)	155 to 175 g·cm (2.16 to 2.43 oz·inch)	3006 ± 10 Hz

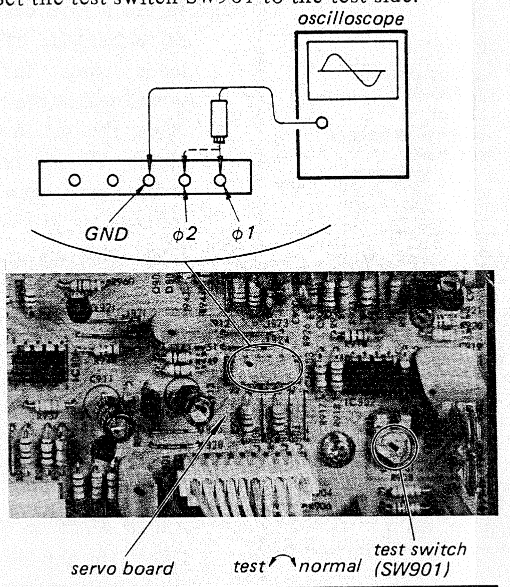
Note:

1. $°C = \frac{5}{9}(°F - 32)$ or $°F = \frac{9}{5}°C + 32$
2. 1 oz·inch = 72 g·cm
3. Be sure to perform the normal or reverse forward torque adjustment first before performing the normal or reverse fast-forward torque adjustment. The normal or reverse fast-forward torque's value changes in proportion to the changed amount of the normal or reverse forward torque.
4. Be sure to run the set with a tape cassette installed for about three to five minutes before performing the normal or reverse forward/fast-forward torque adjustments and measurements. When the set is turned on from the cold start (the reel motor is cooled), the forward torque is about 5 g·cm larger and the fast-forward torque is about 10 g·cm larger than the value given above. When the set has been running over 20 minutes, on the contrary, these torques are about 3 g·cm and 5 g·cm smaller than those given above respectively.

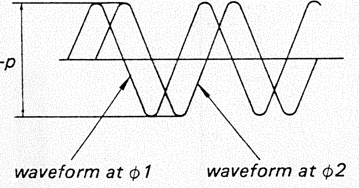
Capstan Motor Adjustment

(Refer to Table 1 on page 41.)

1. Set the test switch SW901 to the test side.

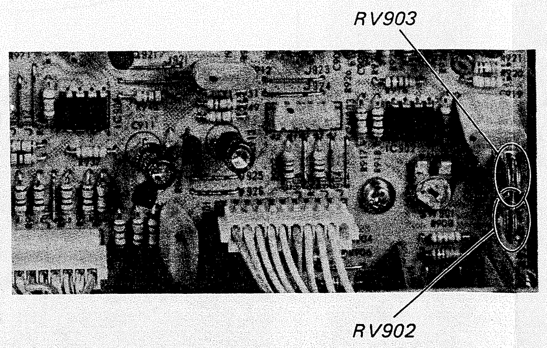


Terminal	Adjust	Specifications
φ 1	RV902	4 Vp-p
φ 2	RV903	4 Vp-p



2. Set the test switch back to the normal side.

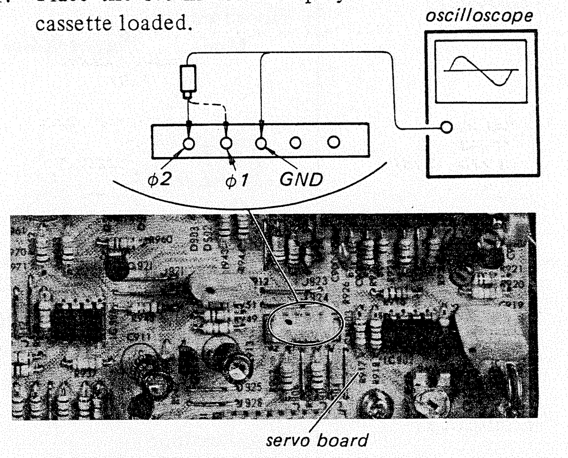
Adjustment Location:
– Servo Board –



Reel Motor Adjustment

(Refer to Table 1 on page 41.)

1. Place the set in forward playback mode with a cassette loaded.



a)

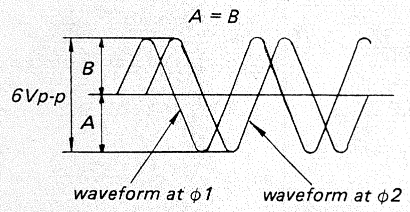
Terminal	Adjust	Specifications
φ 1	RV906	A = B
φ 2	RV908	A = B

b) Adjust RV910 so that the voltages at φ1 and φ2 become equal.

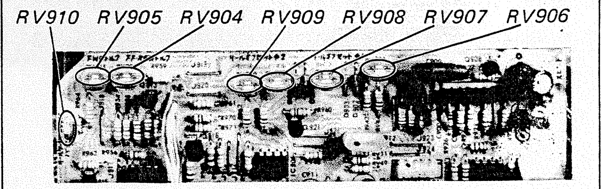
2. Place the set in mode without loading a cassette.

Terminal	Adjust	Specifications
φ 1	RV907	A = B
φ 2	RV909	A = B

3. Install the torque meter CQ-101A and adjust RV905 to obtain 45 ± 8 g·cm (0.62 ± 0.11 oz·inch) torque in forward-playback mode.
   Make sure that the reverse-playback torque is 42–55 g·cm (0.58–0.76 oz·inch).
4. Install the torque meter CQ-201B and run the set in normal fast forward mode.
5. Adjust RV904 so that the torque meter reads 180 ± 15 g·cm (2.5 ± 0.2 oz·inch).



Adjustment Location:
– Servo Board –

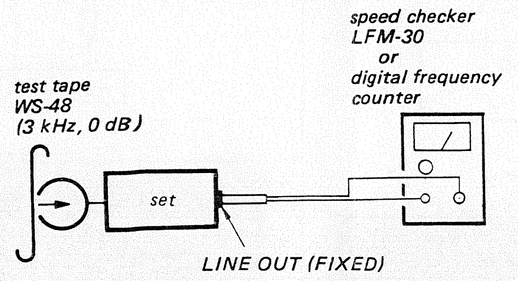


Tape Speed Adjustment

(Refer to Table 1 on page 41.)

Procedure:

Mode: Playback (normal or reverse)


speed checker
LFM-30
or
digital frequency counter
test tape
WS-48
(3 kHz, 0 dB)
set
LINE OUT (FIXED)

Adjust RV901 to obtain the specified values.

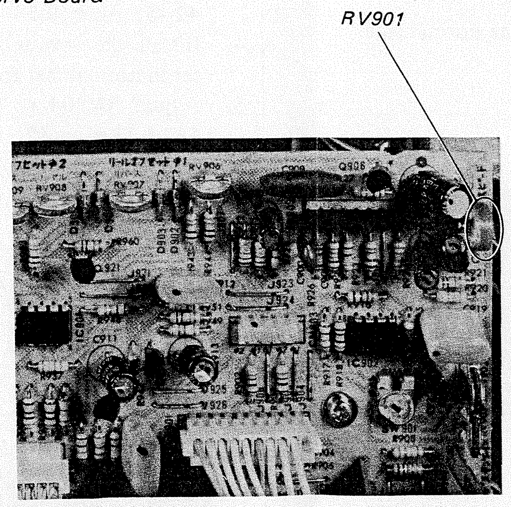
Specification:

Speed checker	Digital frequency counter
−0.7 – +0.7 %	2,980 – 3,020 Hz

Frequency difference between the readings at the beginning and end of tape should be within 0.7 % (20 Hz).

Adjustment Location:

– Servo Board –



Auto-Reverse Adjustment

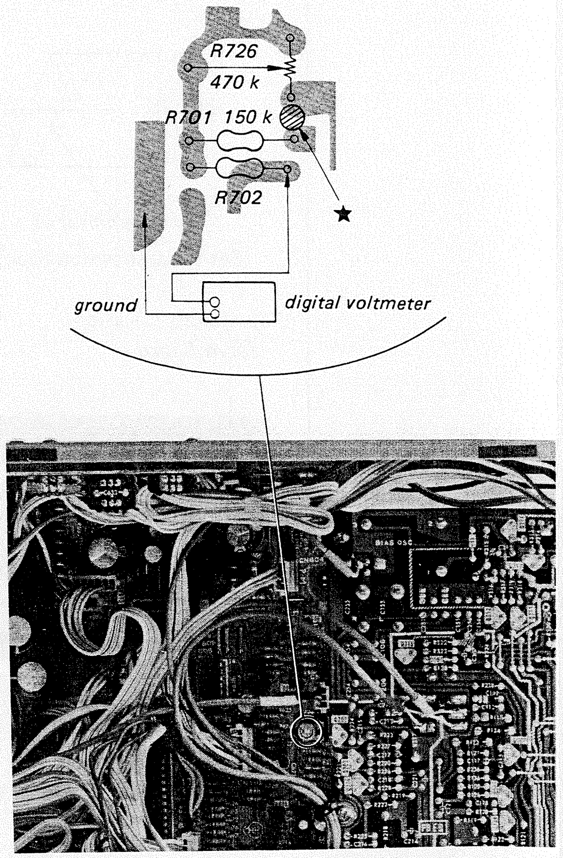
1. Push the DIRECTION MODE ⟲ switch on.
2. Install a tape cassette which is fully wound up on either side of the two hubs, and which has leader tapes. Install it with the wound-up side positioned at the right-hand side for example.
3. Place the set in the reverse-playback mode for about 20 seconds after passing through the leader tape, and then make the set in stop mode.
4. Place the set in normal-playback mode, and check for the mode changing to reverse playback when the leader tape comes to the leftside tape sensor. When the auto-reverse operation is not good, the set becomes in the automatically-reversed mode at the tape end passing through the whole leader tape length.

Procedure:

Adjust R726 so that the digital voltmeter reads 1.0 V (in any mode). If necessary, bridge the patterns shown by ★.

Adjustment Location:

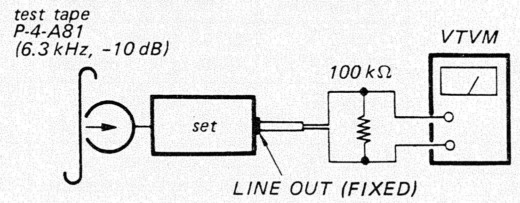
– Servo Board –


R726
470 k
R701 150 k
R702
★
ground
digital voltmeter

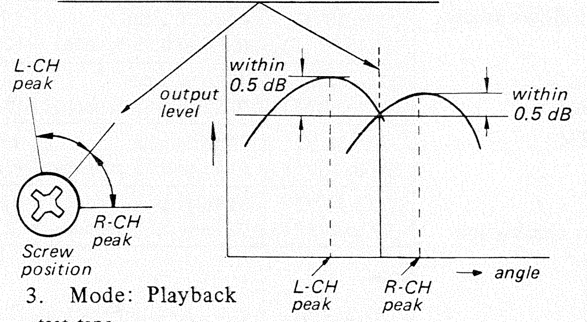
Record/playback Head Azimuth Adjustment

Procedure:

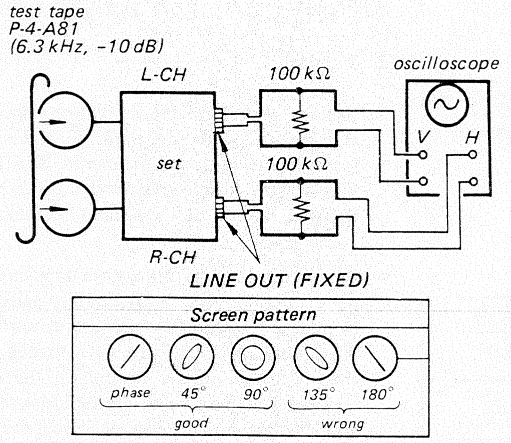
1. Mode: Playback


test tape
P-4-A81
(6.3 kHz, −10 dB)
VTVM
100 kΩ
set
LINE OUT (FIXED)

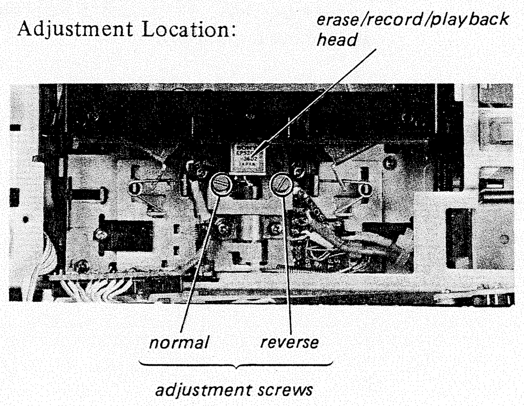
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.


L-CH peak
output level
within 0.5 dB
within 0.5 dB
R-CH peak
Screw position
L-CH peak
R-CH peak
angle

3. Mode: Playback


test tape
P-4-A81
(6.3 kHz, −10 dB)
L-CH
100 kΩ
oscilloscope
set
100 kΩ
V
H
R-CH
LINE OUT (FIXED)
Screen pattern
phase
45°
90°
135°
180°
good
wrong

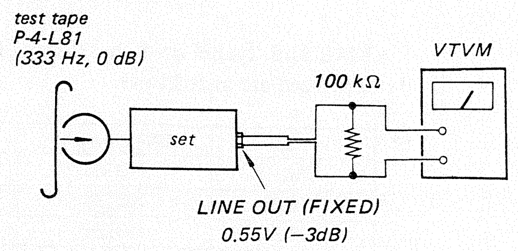
Adjustment Location:


erase/record/playback head
normal
reverse
adjustment screws

Playback Level Adjustment

Procedure:

1. Mode: Playback


test tape
P-4-L81
(333 Hz, 0 dB)
VTVM
100 kΩ
set
LINE OUT (FIXED)
0.55V (−3dB)

Adjust RV102 (L-CH) and RV202 (R-CH) to obtain the specified values.

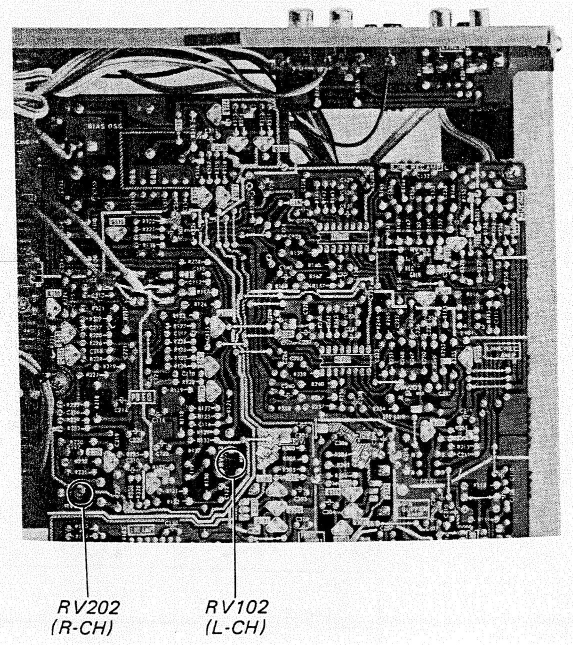
Specification:

LINE OUT level: 0.52–0.58 V
(−3.5 to −2.5 dB)

Check that LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location:

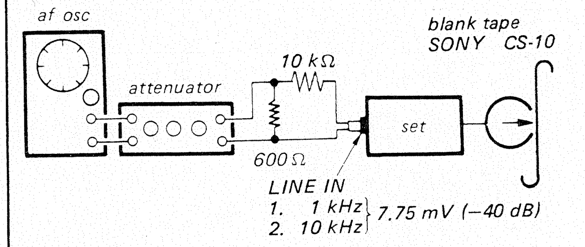
– Record/Playback Board –


RV202
(R-CH)
RV102
(L-CH)

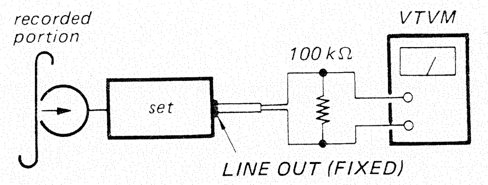
Record Bias Adjustment

Procedure:

1. Mode: Standard record (See page 41.)

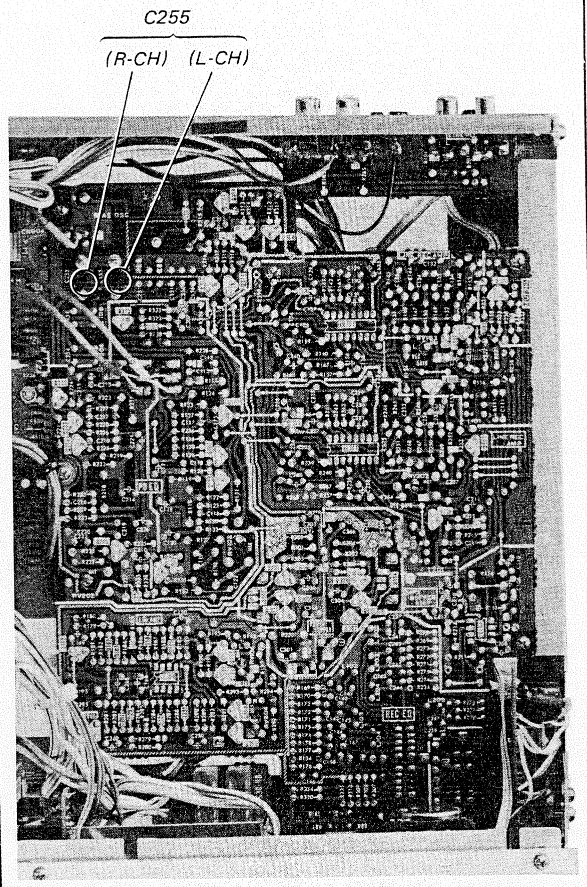

af osc
attenuator
10 kΩ
600 Ω
set
blank tape
SONY CS-10
LINE IN
1. 1 kHz
2. 10 kHz
7.75 mV (–40 dB)

2. Mode: Playback


recorded portion
set
100 kΩ
VTVM
LINE OUT (FIXED)

Adjust C255 (L-CH) and C255 (R-CH) to make 10 kHz and 1 kHz signal output levels equal.

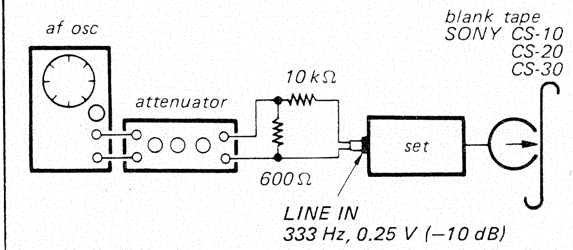
Adjustment Location: *– Record/Playback Board –*


C255
(R-CH) (L-CH)

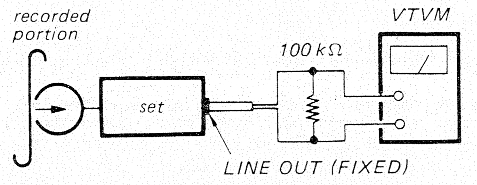
Record Level Adjustment

Procedure:

1. Mode: Standard record (See page 41.)


af osc
attenuator
10 kΩ
600 Ω
set
blank tape
SONY CS-10
CS-20
CS-30
LINE IN
333 Hz, 0.25 V (–10 dB)

2. Mode: Playback (normal and reverse)


recorded portion
set
100 kΩ
VTVM
LINE OUT (FIXED)

Adjust RV103 (L-CH) and RV203 (R-CH) to obtain the specified values.

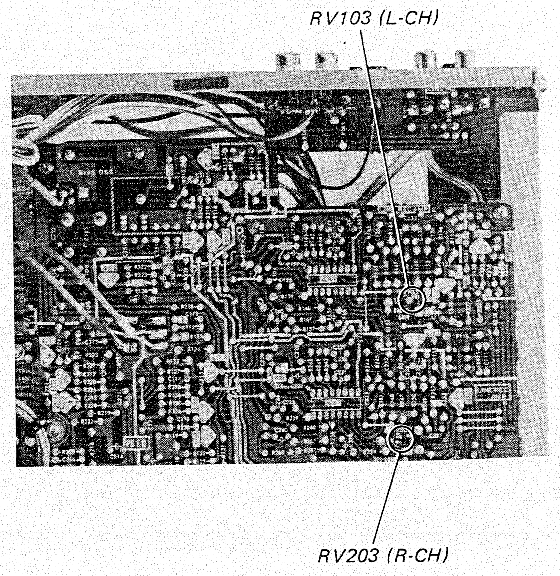
Specification:

Tape	LINE OUT level
CS-10	0.39 – 0.49 V (–6 to –4 dB)
CS-25	0.38 – 0.52 V (–6.5 to –3.5 dB)
CS-30	

Level difference between normal and reverse mode: less than 1.5 dB

Adjustment Location:

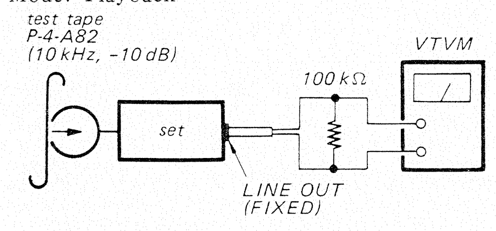
– Record/Playback Board –


RV103 (L-CH)
RV203 (R-CH)

Playback Frequency Response Adjustment

Procedure:

Mode: Playback


test tape
P-4-A82
(10 kHz, –10 dB)
set
100 kΩ
VTVM
LINE OUT
(FIXED)

Solder or unsolder the patterns at Ⓐ to obtain specified values.

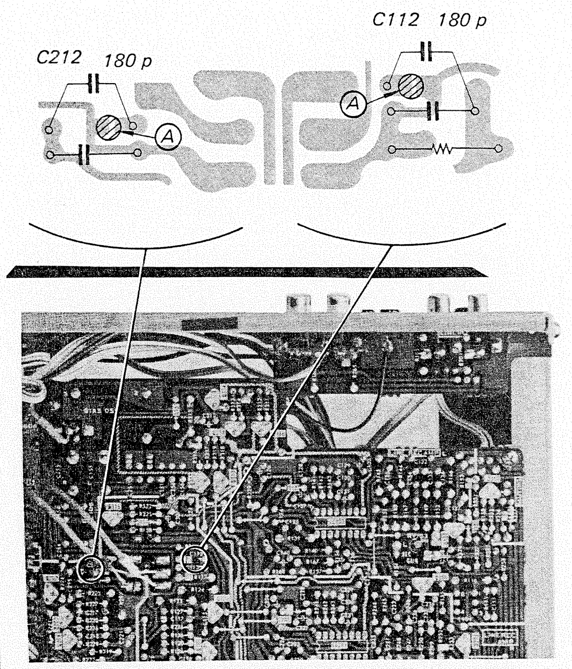
Specification:

TAPE switch	LINE OUT (FIXED) level
I (NORMAL)	120 – 250 mV (–16 to –10 dB)
II (Fe-Cr)	77 – 170 mV (–20 to –13 dB)

Adjustment Location:

– Record/Playback Board –

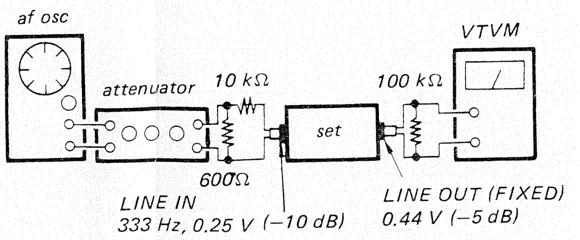
Bridge patterns	LINE OUT (FIXED) level
(open)	down
Ⓐ	up


C212 180 p
C112 180 p
Ⓐ
Ⓐ

Meter Level Adjustment

Procedure:

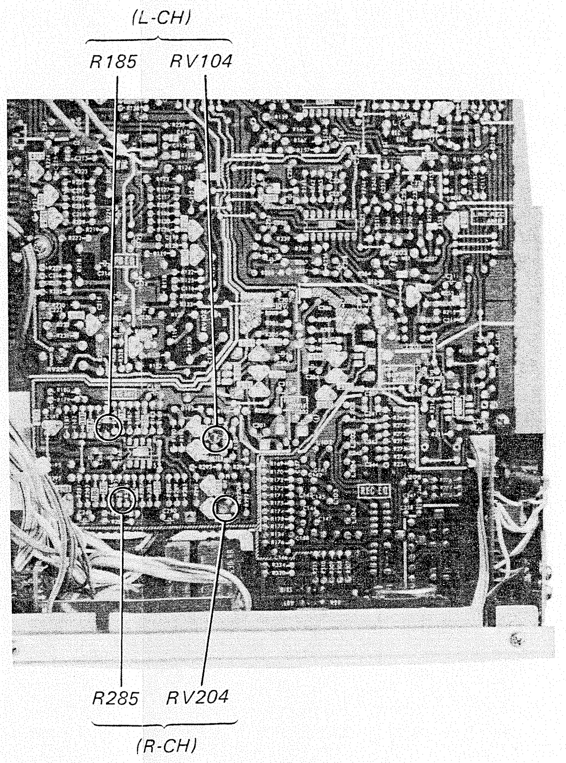
1. Mode: Standard record (See page 41.)


af osc
attenuator
10 kΩ
600Ω
set
100 kΩ
VTVM
LINE IN
333 Hz, 0.25 V (–10 dB)
LINE OUT (FIXED)
0.44 V (–5 dB)

2. Adjust RV104 (L-CH) and RV204 (R-CH) to obtain 0 VU reading on the level meter.
3. Reduce the LINE IN input level to 2.7 mV (–49 dB).
   Check if the –40 dB is not indicated. When –40 dB is indicated, adjust by bridging the patterns for R185 (L-CH) and R285 (R-CH).

Adjustment Location:

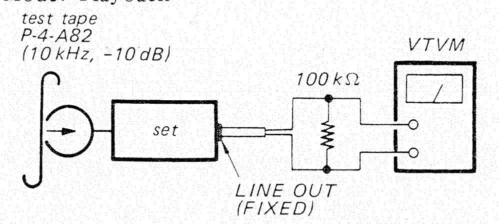
– Record/Playback Board –


(L-CH)
R185 RV104
R285 RV204
(R-CH)

Playback Frequency Response Adjustment

Procedure:

Mode: Playback


test tape
P-4-A82
(10 kHz, -10 dB)
VTVM
100 kΩ
set
LINE OUT
(FIXED)

Solder or unsolder the patterns at Ⓐ to obtain specified values.

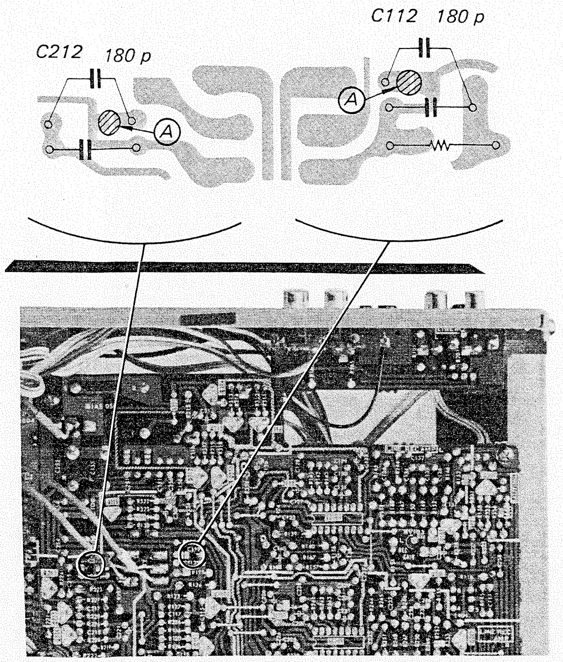
Specification:

TAPE switch	LINE OUT (FIXED) level
I (NORMAL)	120 – 250 mV (–16 to –10 dB)
II (Fe-Cr)	77 – 170 mV (–20 to –13 dB)

Adjustment Location:

– Record/Playback Board –

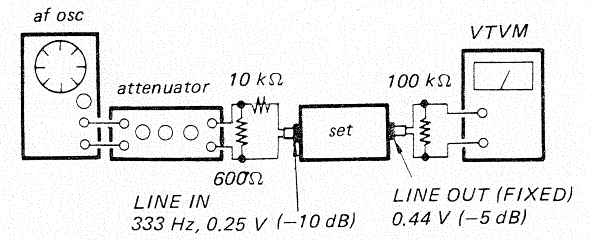
Bridge patterns	LINE OUT (FIXED) level
(open)	down
Ⓐ	up


C212 180 p
C112 180 p
Ⓐ
Ⓐ

Meter Level Adjustment

Procedure:

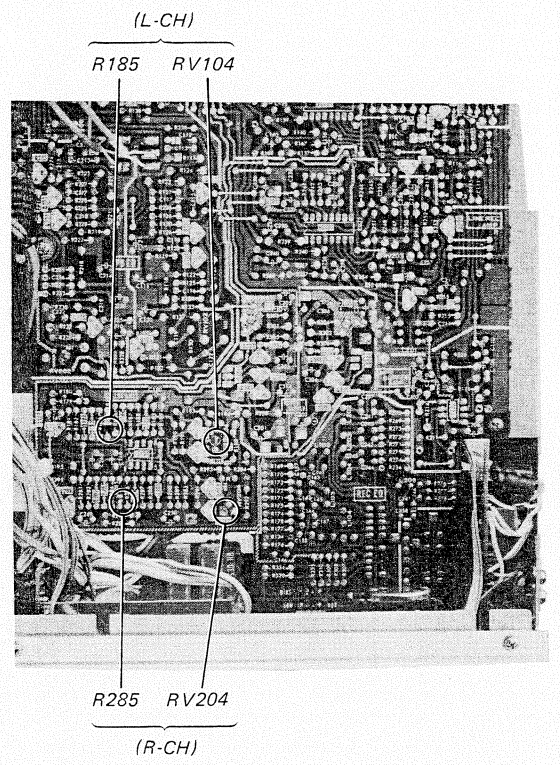
1. Mode: Standard record (See page 41.)


af osc
VTVM
attenuator
10 kΩ
100 kΩ
set
600Ω
LINE IN
333 Hz, 0.25 V (–10 dB)
LINE OUT (FIXED)
0.44 V (–5 dB)

2. Adjust RV104 (L-CH) and RV204 (R-CH) to obtain 0 VU reading on the level meter.
3. Reduce the LINE IN input level to 2.7 mV (–49 dB).
   Check if the –40 dB is not indicated. When –40 dB is indicated, adjust by bridging the patterns for R185 (L-CH) and R285 (R-CH).

Adjustment Location:

– Record/Playback Board –


(L-CH)
R185
RV104
R285
RV204
(R-CH)

MEMO

SECTION 4

DIAGRAMS

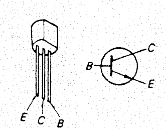
4-1. MOUNTING DIAGRAM – Record/Playback Amp Section –

– Conductor Side –

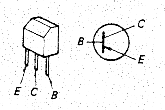
Replacement Semiconductors

For replacement, use semiconductors except in (   ).

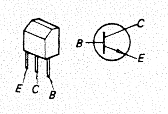
Q101, 201: 2SC1345



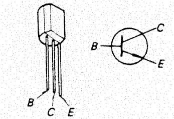
Q102, 202
Q104, 204
Q308 } **: 2SA1138**



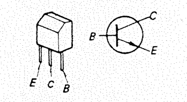
Q103, 203
Q307 } **: 2SC2676**



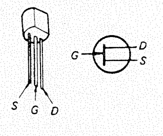
Q105, 205
Q106, 206
Q108, 208
Q109, 209
Q110, 210 } **: 2SC1364**
Q305
Q311, 312
Q314, 315
Q402
Q107, 207: 2SC2001



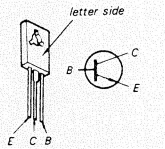
(2SC458A)



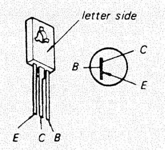
Q301, 302: 2SK30A



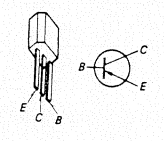
Q303: 2SD414


letter side
C
B
E
E C B

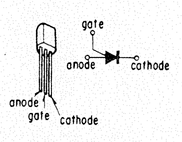
Q304: 2SB548


letter side
C
B
E
E C B

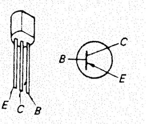
Q306, 309
Q310, 313 } **: 2SA1027R**
(2SA1026)



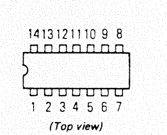
Q401: NI3T1


gate
anode
cathode
anode
gate
cathode

Q403–406: 2SA952

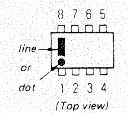


IC101, 201: CX174


14 13 12 11 10 9 8
1 2 3 4 5 6 7

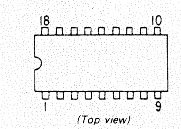
(Top view)

IC102: μPC4557C
IC103: NJM4560D
IC104: μPC4558C


8 7 6 5
line
or
dot
1 2 3 4

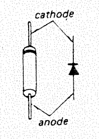
(Top view)

IC401: MSL9351

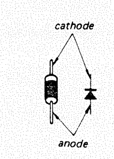


(Top view)

D102–105
D202–205 } **: 1S1555**
D401

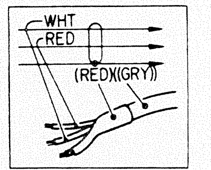

cathode
anode

D304, 305: HZ6B2L

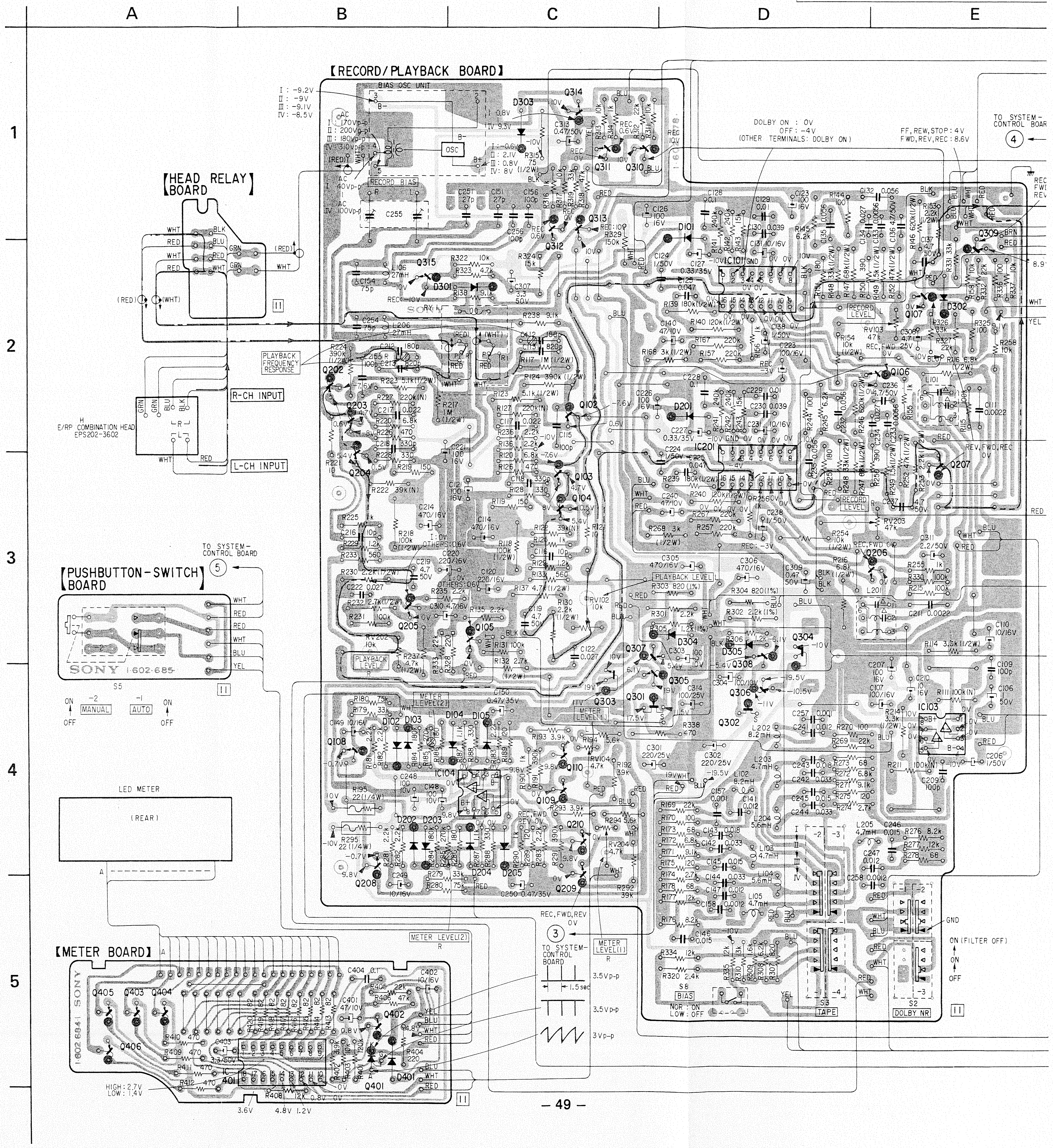

cathode
anode

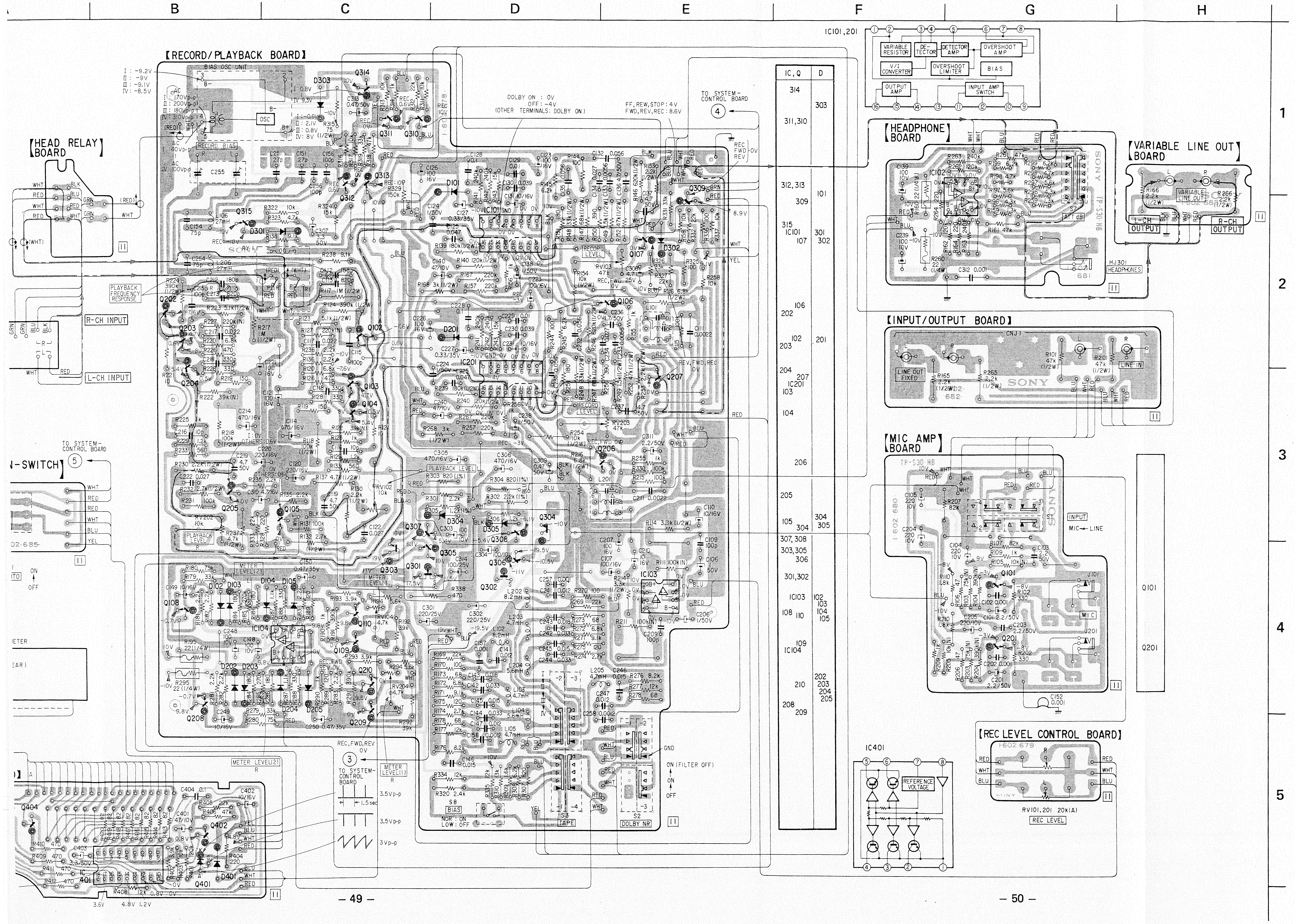
Note:

- Color code of sleeving over the end of the jacket.

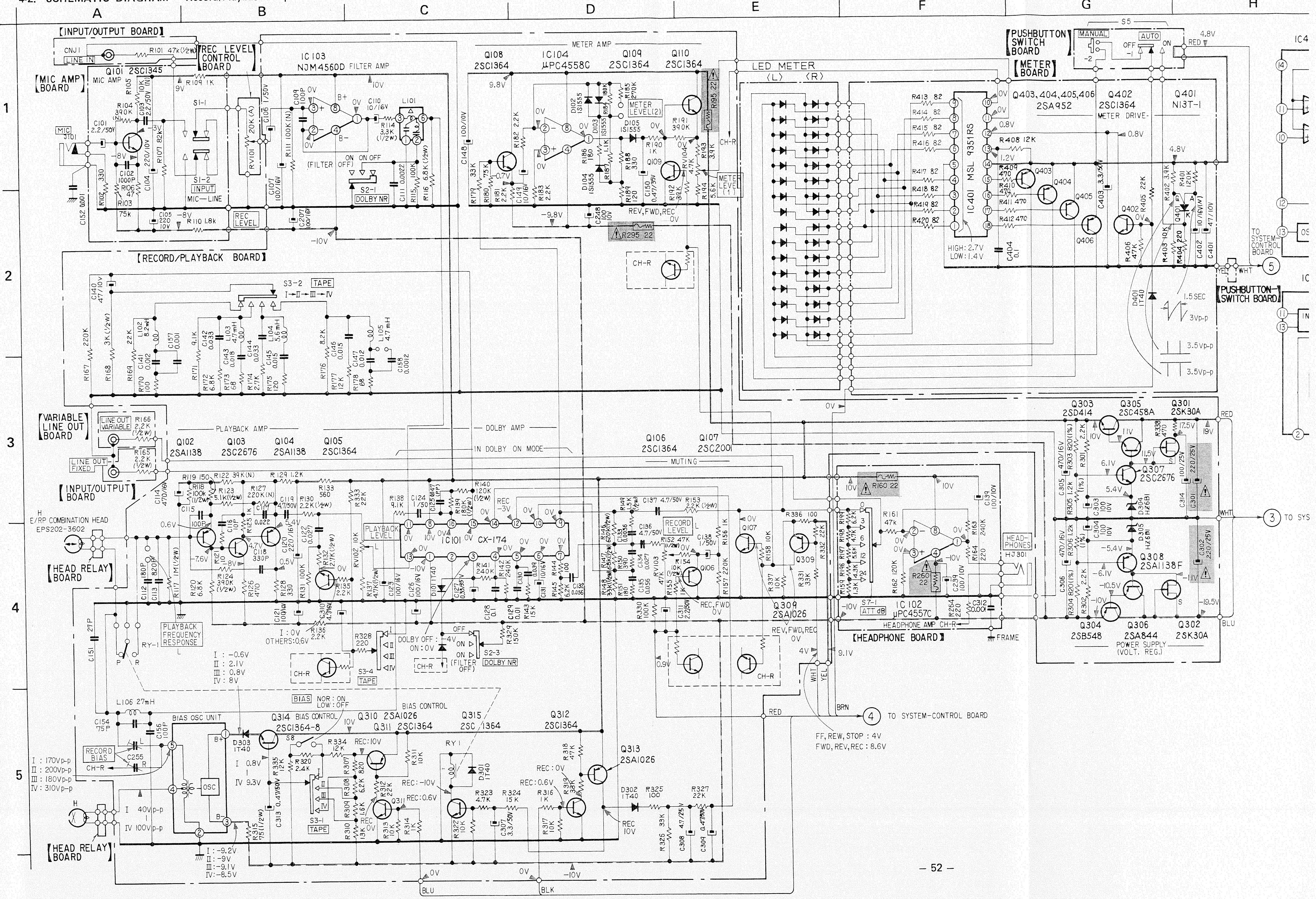

WHT
RED
(RED)(GRY)

- Ⓕ : fusible resistor.
- ▨ : B + pattern
- ▨ : B – pattern
- ➡ : signal path
- ➡ : L-CH signal path
- ➡ : R-CH signal path

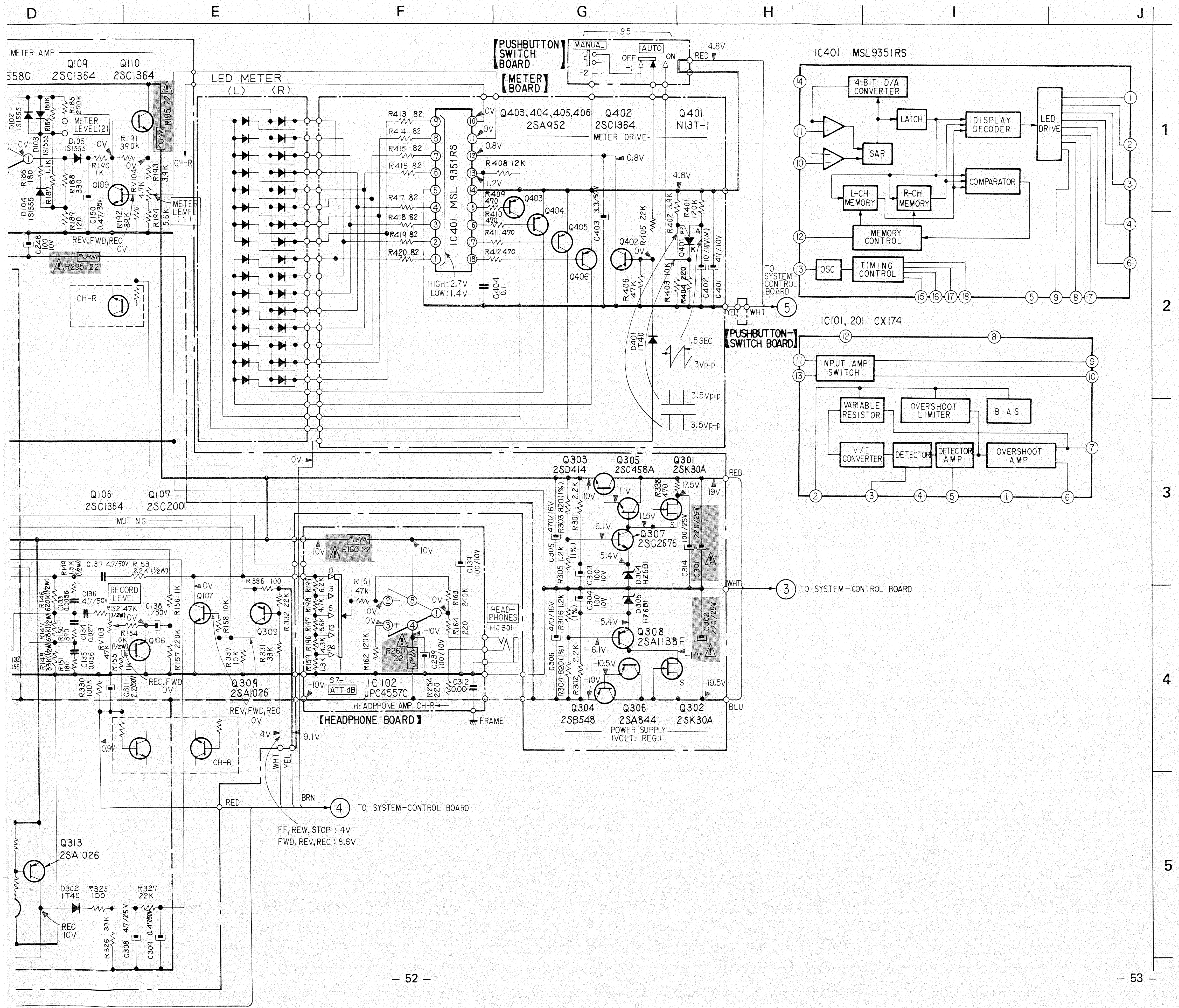

A
B
C
D
E
1
2
3
4
5
[RECORD/PLAYBACK BOARD]
BIAS OSC UNIT
OSC
RECORD BIAS
[HEAD RELAY BOARD]
PLAYBACK FREQUENCY RESPONSE
R-CH INPUT
L-CH INPUT
H
E/RP COMBINATION HEAD
EPS202-3602
TO SYSTEM-CONTROL BOARD
⑤
[PUSHBUTTON-SWITCH BOARD]
SONY 1-602-685
S5
ON -2 -1 ON
MANUAL AUTO
OFF OFF
LED METER
(REAR)
[METER BOARD]
HIGH: 2.7V
LOW: 1.4V
3.6V 4.8V 1.2V
METER LEVEL(2)
METER LEVEL(1)
TO SYSTEM-CONTROL BOARD
③
REC, FWD, REV 0V
3.5Vp-p
1.5sec
3.5Vp-p
3Vp-p
DOLBY ON: 0V
OFF: -4V
(OTHER TERMINALS: DOLBY ON)
FF, REW, STOP: 4V
FWD, REV, REC: 8.6V
TO SYSTEM-CONTROL BOARD
④
RECORD LEVEL
PLAYBACK LEVEL
S8 BIAS
NOR: ON
LOW: OFF
S3 TAPE
S2 DOLBY NR
ON (FILTER OFF)
ON
OFF
GND
IC101
IC201
IC102
IC103
IC104
IC401
Q401
Q402
Q403
Q404
Q405
Q406


B
C
D
E
F
G
H
1
2
3
4
5
【RECORD/PLAYBACK BOARD】
【HEAD RELAY BOARD】
【HEADPHONE BOARD】
【VARIABLE LINE OUT BOARD】
【INPUT/OUTPUT BOARD】
【MIC AMP BOARD】
【REC LEVEL CONTROL BOARD】
IC101,201
VARIABLE RESISTOR
DE-TECTOR
DETECTOR AMP
OVERSHOOT AMP
V/I CONVERTER
OVERSHOOT LIMITER
BIAS
OUTPUT AMP
INPUT AMP SWITCH
IC401
REFERENCE VOLTAGE
IC, Q
D
BIAS OSC UNIT
RECORD BIAS
PLAYBACK FREQUENCY RESPONSE
R-CH INPUT
L-CH INPUT
TO SYSTEM-CONTROL BOARD
DOLBY ON : 0V
OFF : -4V
(OTHER TERMINALS: DOLBY ON)
FF, REW, STOP : 4V
FWD, REV, REC : 8.6V
RECORD LEVEL
PLAYBACK LEVEL
METER LEVEL(1)
METER LEVEL(2)
REC, FWD, REV 0V
REV, FWD, REC 0V
S8 BIAS
NOR : ON
LOW : OFF
S3 TAPE
S2 DOLBY NR
ON (FILTER OFF)
ON
OFF
3.5Vp-p
1.5sec
3Vp-p
L-CH OUTPUT
R-CH OUTPUT
HJ301 HEADPHONES
ATT dB
LINE OUT FIXED
LINE IN
INPUT
MIC ← LINE
MIC
J101
J201
RV101, 201 20k(A)
REC LEVEL
SONY
TP-S30 HB
Q101
Q201
I : -9.2V
II : -9V
III : -9.1V
IV : -8.5V
N-SWITCH

4-2. SCHEMATIC DIAGRAM – Record/Playback Amp Section –



A
B
C
D
E
F
G
H
1
2
3
4
5
[INPUT/OUTPUT BOARD]
CNJ1
LINE IN
R101 47k(1/2W)
[REC LEVEL CONTROL BOARD]
[MIC AMP BOARD]
MIC J101
Q101 2SC1345
IC103 NJM4560D FILTER AMP
(FILTER OFF)
S2-1 DOLBY NR
S1-1
S1-2 INPUT MIC—LINE
REC LEVEL
[RECORD/PLAYBACK BOARD]
METER AMP
Q108 2SC1364
IC104 μPC4558C
Q109 2SC1364
Q110 2SC1364
METER LEVEL(2)
METER LEVEL(1)
REV,FWD,REC
R295 22
CH-R
LED METER (L) (R)
[PUSHBUTTON SWITCH BOARD]
[METER BOARD]
S5
MANUAL
AUTO
OFF
ON
Q403,404,405,406 2SA952
Q402 2SC1364
METER DRIVE
Q401 N13T-1
IC401 MSL 9351RS
HIGH: 2.7V LOW: 1.4V
TO SYSTEM-CONTROL BOARD
[PUSHBUTTON SWITCH BOARD]
1.5 SEC
3Vp-p
3.5Vp-p
S3-2 TAPE I→II→III→IV
[VARIABLE LINE OUT BOARD]
LINE OUT VARIABLE
LINE OUT FIXED
[INPUT/OUTPUT BOARD]
PLAYBACK AMP
Q102 2SA1138
Q103 2SC2676
Q104 2SA1138
Q105 2SC1364
DOLBY AMP
IN DOLBY ON MODE
Q106 2SC1364
Q107 2SC2001
MUTING
IC101 CX-174
PLAYBACK LEVEL
RECORD LEVEL
H E/RP COMBINATION HEAD EPS202-3602
[HEAD RELAY BOARD]
PLAYBACK FREQUENCY RESPONSE
RY-1
I : 0V OTHERS: 0.6V
I : -0.6V II : 2.1V III : 0.8V IV : 8V
DOLBY OFF: -4V ON: 0V
S2-3 DOLBY NR
S3-4 TAPE
Q309 2SA1026
R160 22
IC102 μPC4557C
S7-1 ATT dB
HEADPHONE AMP CH-R
[HEADPHONE BOARD]
HEADPHONES HJ301
FRAME
Q303 2SD414
Q305 2SC458A
Q301 2SK30A
Q307 2SC2676
Q308 2SA1138F
Q304 2SB548
Q306 2SA844
Q302 2SK30A
POWER SUPPLY (VOLT. REG.)
TO SYS
RED
WHT
BLU
YEL
BRN
TO SYSTEM-CONTROL BOARD
FF, REW, STOP : 4V FWD, REV, REC : 8.6V
L106 27mH
BIAS OSC UNIT
OSC
RECORD BIAS
I : 170Vp-p II : 200Vp-p III : 180Vp-p IV : 310Vp-p
I 40Vp-p IV 100Vp-p
I : -9.2V II : -9V III : -9.1V IV : -8.5V
BIAS NOR: ON LOW: OFF
BIAS CONTROL
Q314 BIAS CONTROL 2SC1364-8
Q310 2SA1026
Q311 2SC1364
Q315 2SC1364
Q312 2SC1364
Q313 2SA1026
S3-1 TAPE
RY1
D301 1T40
D302 1T40
D303 1T40
REC: 0V
REC: 0.6V
REC: -10V
BLU
BLK


D
E
F
G
H
I
J
1
2
3
4
5
METER AMP
Q109 2SC1364
Q110 2SC1364
LED METER (L) (R)
PUSHBUTTON SWITCH BOARD
METER BOARD
S5
MANUAL
AUTO
OFF
ON
4.8V
RED
Q403,404,405,406 2SA952
Q402 2SC1364
METER DRIVE
Q401 N13T-1
IC401 MSL 9351RS
R413 82
R414 82
R415 82
R416 82
R417 82
R418 82
R419 82
R420 82
R408 12K
HIGH: 2.7V
LOW: 1.4V
C404 0.1
1.5 SEC
3Vp-p
3.5Vp-p
D401 1T40
TO SYSTEM-CONTROL BOARD
YEL
WHT
IC401 MSL9351RS
4-BIT D/A CONVERTER
LATCH
DISPLAY DECODER
LED DRIVE
SAR
L-CH MEMORY
R-CH MEMORY
COMPARATOR
MEMORY CONTROL
OSC
TIMING CONTROL
IC101, 201 CX174
INPUT AMP SWITCH
VARIABLE RESISTOR
OVERSHOOT LIMITER
BIAS
V/I CONVERTER
DETECTOR
DETECTOR AMP
OVERSHOOT AMP
R295 22
R195 22
CH-R
METER LEVEL(2)
METER LEVEL(1)
REV,FWD,REC
Q106 2SC1364
Q107 2SC2001
MUTING
RECORD LEVEL
R160 22
HEAD-PHONES
HJ301
IC102 μPC4557C
HEADPHONE AMP CH-R
S7-1 ATT dB
HEADPHONE BOARD
FRAME
Q309 2SA1026
R260 22
Q303 2SD414
Q305 2SC458A
Q301 2SK30A
Q307 2SC2676
Q308 2SA1138F
Q304 2SB548
Q306 2SA844
Q302 2SK30A
POWER SUPPLY (VOLT. REG.)
D304 HZ6B1
D305 HZ6B1
RED
WHT
BLU
TO SYSTEM-CONTROL BOARD
TO SYSTEM-CONTROL BOARD
BRN
FF, REW, STOP : 4V
FWD, REV, REC : 8.6V
Q313 2SA1026
D302 1T40
R325 100
R327 22K
REC 10V

Note:

- Components for right channel have same values as for left channel. Reference numbers are coded from 201.
- (1 %): ±1 % tolerance.
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/8 W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- ▭ : fusible resistor.
- (N) : low-noise resistor.
- (LN) : low-noise capacitor.
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- – – – : B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken in stop mode with a VOM (20 kΩ/V) unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- AC voltage readings in the bias oscillator are taken with an oscilloscope.
- Switch

Ref. No.	Switch	Position
S1	INPUT	LINE
S2	DOLBY NR	OFF
S3	TAPE	TYPE I (NORM)
S4	———	———
S5	PEAK HOLD RESET	OFF
S6	———	———
S7	ATT dB	O
S8	BIAS	NORM

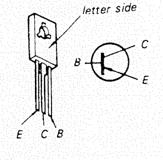
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

4-3. MOUNTING DIAGRAM – System-Control Section –
– Conductor Side –

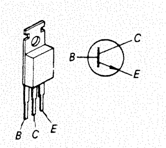
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

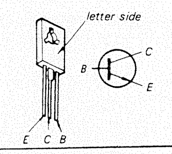
Q601: 2SB548


letter side
B
C
E
E C B

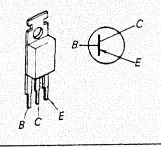
Q603: 2SC1173



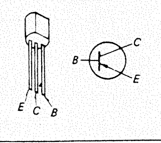
Q604: 2SD414


letter side
B
C
E
E C B

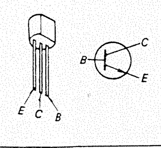
Q605: 2SA473 (2SA755)



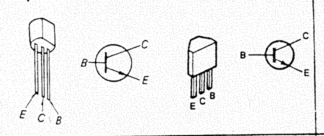
Q606: 2SA684 (2SA773)



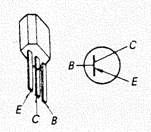
Q602, 607 / Q613–618: 2SC1364 (2SA1815)



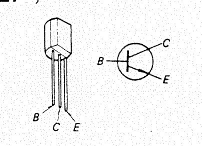
Q608, 610: 2SC2001 (2SD1012)



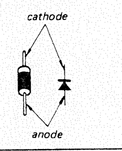
Q609, 611: 2SA1027R (2SA1026)



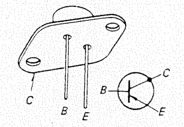
Q619–622, Q626, 627: 2SC1364



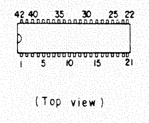
Q623: NJL5141E


cathode
anode

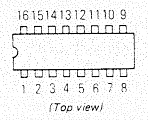
Q624: PH103



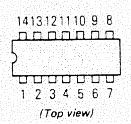
IC601: μPD547C-074


42 40 35 30 25 22
1 5 10 15 21
(Top view)

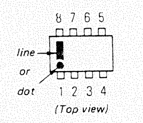
IC602: TC4019BP


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

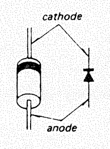
IC603, 604: μPD4069C (MB84069B)
IC605: μPC339C


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

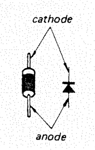
IC606: μPC4558C


8 7 6 5
line
or
dot
1 2 3 4
(Top view)

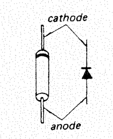
D601–612, D616, 619, D631, 632: 10E2


cathode
anode

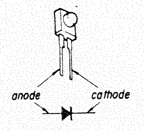
D613: HZ11B2L
D614: HZ9A2L


cathode
anode

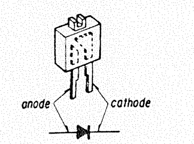
D615, 617 / D618 / D620–623 / D633–635: 1S1555


cathode
anode

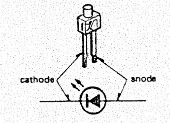
D624: SR110


anode
cathode

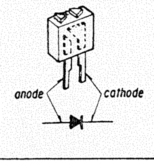
D625: SEL1941D


anode
cathode

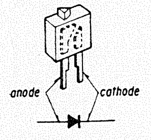
D626: SEL1112R

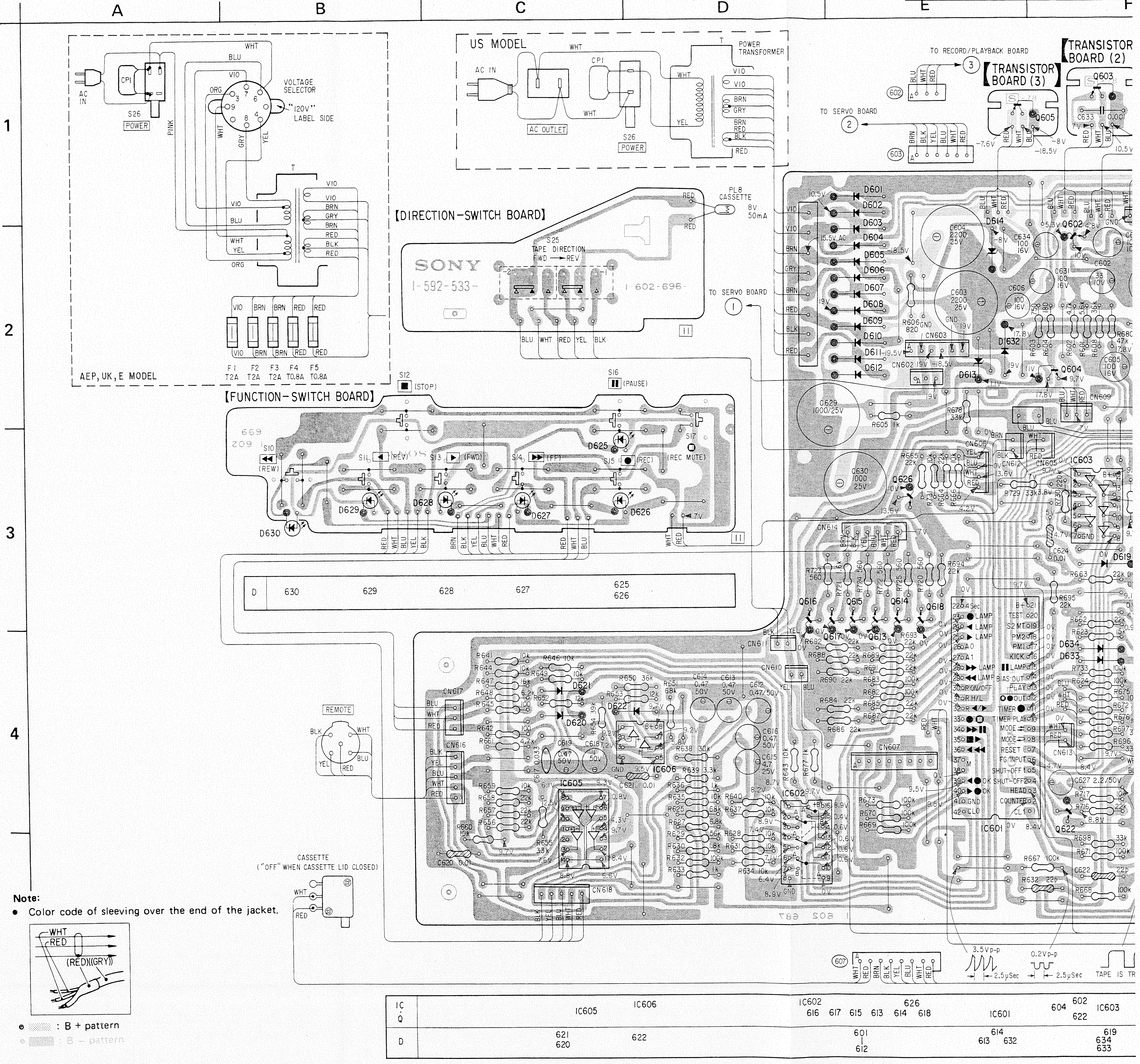

cathode
anode

D627, 630: SEL1733Y


anode
cathode

D628, 629: SEL1331G


anode
cathode


A
B
C
D
E
F
1
2
3
4
AC IN
CPI
S26
POWER
VOLTAGE SELECTOR
"120V" LABEL SIDE
AEP, UK, E MODEL
F1 F2 F3 F4 F5
T2A T2A T2A T0.8A T0.8A
US MODEL
AC OUTLET
POWER TRANSFORMER
[DIRECTION-SWITCH BOARD]
S25
TAPE DIRECTION
FWD — REV
PL8
CASSETTE
8V 50mA
TO SERVO BOARD
[FUNCTION-SWITCH BOARD]
S12 (STOP)
S16 (PAUSE)
S10 (REW)
S11 (REV)
S13 (FWD)
S14 (FF)
S15 (REC)
S17 (REC MUTE)
REMOTE
CASSETTE
("OFF" WHEN CASSETTE LID CLOSED)
TO RECORD/PLAYBACK BOARD
[TRANSISTOR BOARD (3)]
[TRANSISTOR BOARD (2)]
IC601
IC602
IC603
IC605
IC606
3.5Vp-p
2.5μsec
0.2Vp-p
2.5μsec
TAPE IS TR

Note:

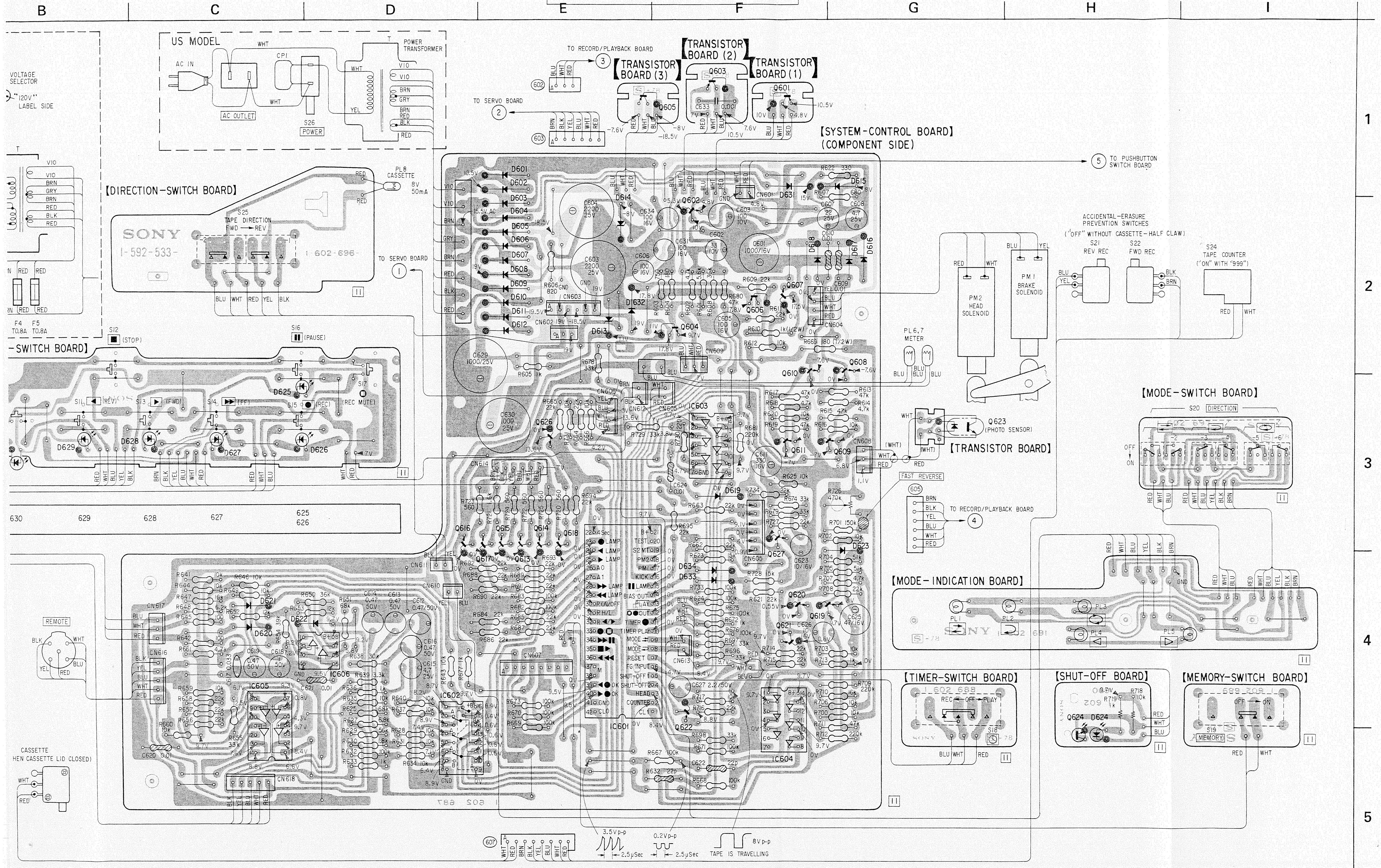
- Color code of sleeving over the end of the jacket.

● : B + pattern

● : B − pattern

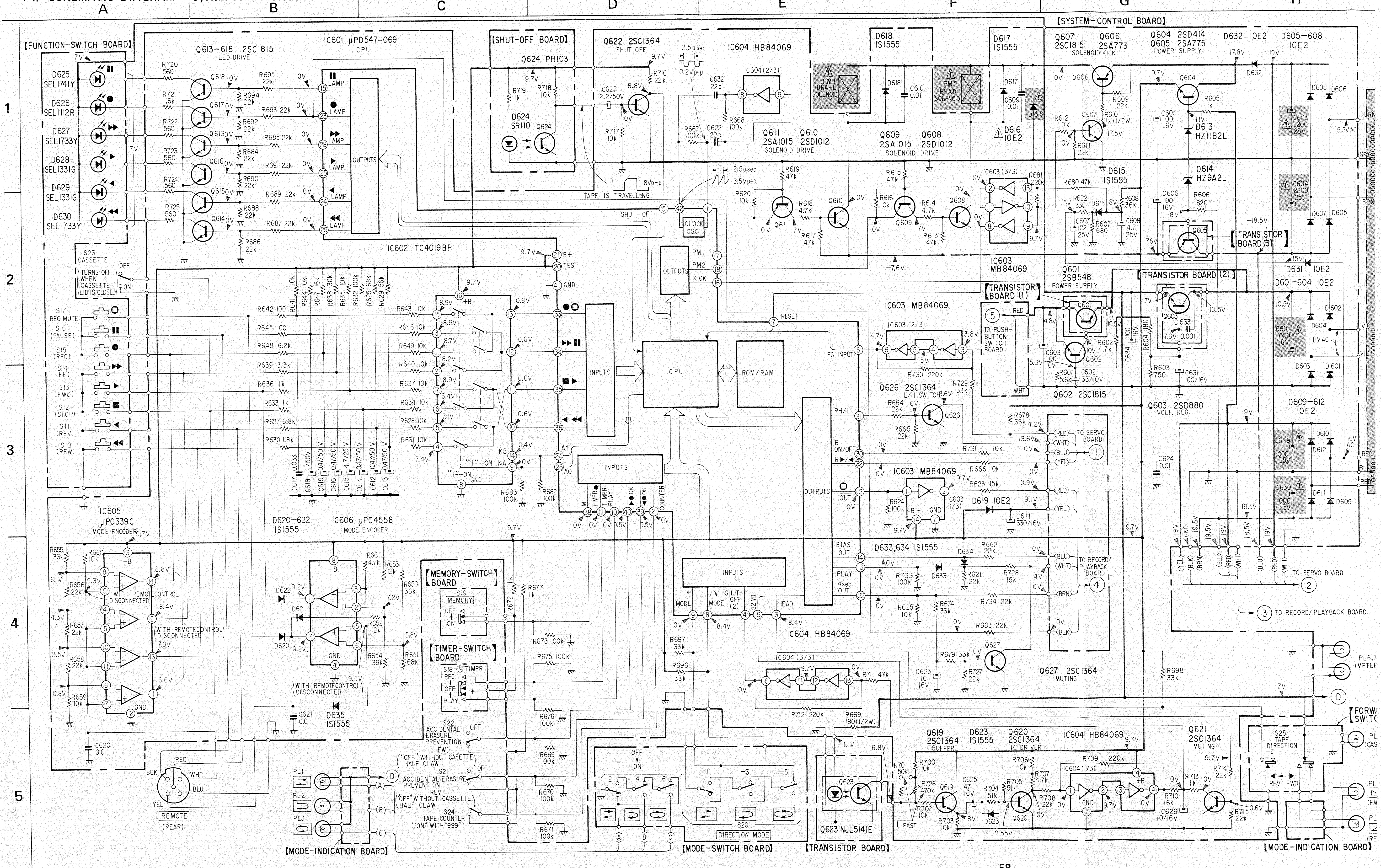
IC Q	IC605	IC606	IC602 616 617 615 613 614 618	626	IC601	604	602 622	IC603
D	621 620	622	601 612		614 613 632			619 634 633

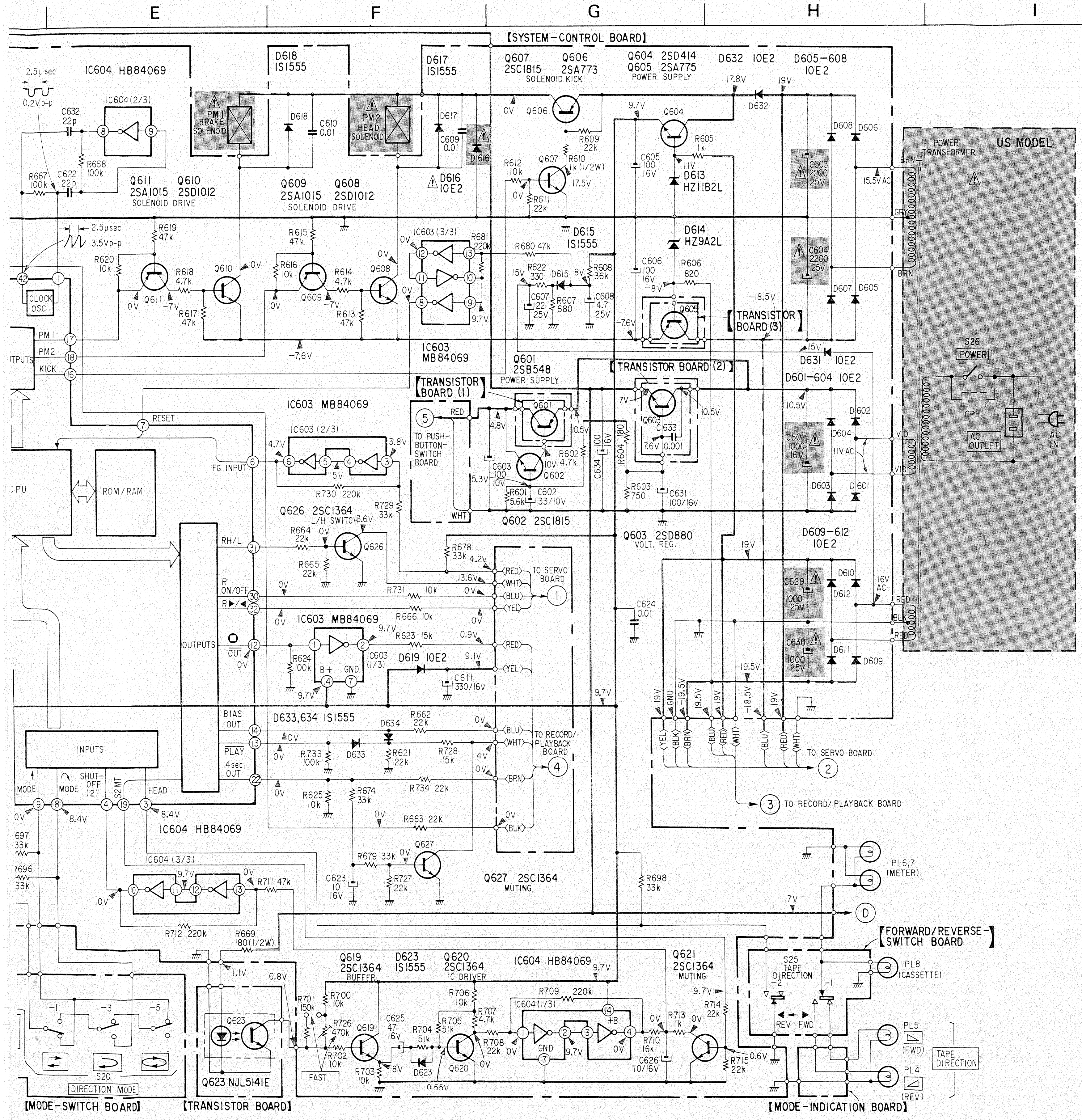
D	630	629	628	627	625 626


B
C
D
E
F
G
H
I
1
2
3
4
5
US MODEL
AC IN
AC OUTLET
CP1
S26 POWER
POWER TRANSFORMER
VOLTAGE SELECTOR
"120V" LABEL SIDE
F4 T0.8A
F5 T0.8A
TO RECORD/PLAYBACK BOARD
TO SERVO BOARD
【TRANSISTOR BOARD (3)】
【TRANSISTOR BOARD (2)】
【TRANSISTOR BOARD (1)】
Q605
Q603
Q601
【SYSTEM-CONTROL BOARD】 (COMPONENT SIDE)
TO PUSHBUTTON SWITCH BOARD
【DIRECTION-SWITCH BOARD】
S25 TAPE DIRECTION FWD → REV
SONY
1-592-533-
1-602-696-
PL8 CASSETTE 8V 50mA
ACCIDENTAL-ERASURE PREVENTION SWITCHES ("OFF" WITHOUT CASSETTE-HALF CLAW)
S21 REV REC
S22 FWD REC
S24 TAPE COUNTER ("ON" WITH "999")
PM2 HEAD SOLENOID
PM1 BRAKE SOLENOID
PL6,7 METER
Q623 (PHOTO SENSOR)
【TRANSISTOR BOARD】
FAST REVERSE
【MODE-SWITCH BOARD】
S20 DIRECTION
-SWITCH BOARD】
S12 (STOP)
S16 (PAUSE)
S11 (REV)
S13 (FWD)
S14 (FF)
S15 (REC)
S17 (REC MUTE)
D629
D628
D627
D626
D625
630
629
628
627
625
626
【MODE-INDICATION BOARD】
PL1
PL2
PL3
PL4
PL5
1-602-691
REMOTE
CASSETTE (WHEN CASSETTE LID CLOSED)
IC601
IC602
IC603
IC604
IC605
IC606
CN617
CN616
CN618
CN607
【TIMER-SWITCH BOARD】
1-602-688
REC — OFF — PLAY
S18
【SHUT-OFF BOARD】
Q624
D624
【MEMORY-SWITCH BOARD】
S19 MEMORY
OFF — ON
1-602-687
3.5Vp-p
2.5μSec
0.2Vp-p
2.5μSec
8Vp-p
TAPE IS TRAVELLING
WHT
RED
BRN
BLK
YEL
BLU
GRY

IC · Q	IC605	IC606	IC602 616 617 615 613 614 618 626	IC601	604	602 622	IC603	606	607 627,611,620 IC604,621	610 609 619	608	
D	621 620	622	601 612	614 613 632			619 634 633		631	618	615 623	617, 616

4-4. SCHEMATIC DIAGRAM – System-Control Section –


A
B
C
D
E
F
G
H
1
2
3
4
5
[FUNCTION-SWITCH BOARD]
D625 SEL1741Y
D626 SEL1112R
D627 SEL1733Y
D628 SEL1331G
D629 SEL1331G
D630 SEL1733Y
Q613–618 2SC1815 LED DRIVE
IC601 μPD547-069 CPU
OUTPUTS
LAMP
[SHUT-OFF BOARD]
Q624 PH103
D624 SR110
Q622 2SC1364 SHUT OFF
IC604 HB84069
TAPE IS TRAVELLING
SHUT-OFF
CLOCK OSC
D618 1S1555
PM1 BRAKE SOLENOID
PM2 HEAD SOLENOID
D617 1S1555
D616 10E2
Q611 2SA1015
Q610 2SD1012 SOLENOID DRIVE
Q609 2SA1015
Q608 2SD1012 SOLENOID DRIVE
IC603 MB84069
[SYSTEM-CONTROL BOARD]
Q607 2SC1815
Q606 2SA773 SOLENOID KICK
Q604 2SD414
Q605 2SA775 POWER SUPPLY
D632 10E2
D605–608 10E2
D613 HZ11B2L
D614 HZ9A2L
D615 1S1555
[TRANSISTOR BOARD (3)]
Q601 2SB548 POWER SUPPLY
[TRANSISTOR BOARD (1)]
[TRANSISTOR BOARD (2)]
D631 10E2
D601–604 10E2
TO PUSH-BUTTON-SWITCH BOARD
Q602 2SC1815
Q603 2SD880 VOLT. REG.
D609–612 10E2
S23 CASSETTE
TURNS OFF WHEN CASSETTE LID IS CLOSED
S17 REC MUTE
S16 (PAUSE)
S15 (REC)
S14 (FF)
S13 (FWD)
S12 (STOP)
S11 (REV)
S10 (REW)
IC602 TC4019BP
INPUTS
CPU
ROM/RAM
FG INPUT
RESET
Q626 2SC1364 L/H SWITCH
TO SERVO BOARD
D619 10E2
D633,634 1S1555
TO RECORD/PLAYBACK BOARD
TO SERVO BOARD
TO RECORD/PLAYBACK BOARD
Q627 2SC1364 MUTING
IC605 μPC339C MODE ENCODER
WITH REMOTECONTROL DISCONNECTED
D620–622 1S1555
IC606 μPC4558 MODE ENCODER
[MEMORY-SWITCH BOARD]
S19 MEMORY
[TIMER-SWITCH BOARD]
S18 TIMER
REC
OFF
PLAY
D635 1S1555
S22 ACCIDENTAL ERASURE PREVENTION FWD
("OFF" WITHOUT CASETTE HALF CLAW
S21 ACCIDENTAL ERASURE PREVENTION REV
("OFF" WITHOUT CASSETTE HALF CLAW
S24 TAPE COUNTER ("ON" WITH "999")
REMOTE (REAR)
[MODE-INDICATION BOARD]
S20 DIRECTION MODE
[MODE-SWITCH BOARD]
Q623 NJL5141E
[TRANSISTOR BOARD]
Q619 2SC1364 BUFFER
D623 1S1555
Q620 2SC1364 IC DRIVER
IC604 HB84069
Q621 2SC1364 MUTING
S25 TAPE DIRECTION
REV
FWD
[MODE-INDICATION BOARD]
PL6,7 (METER)

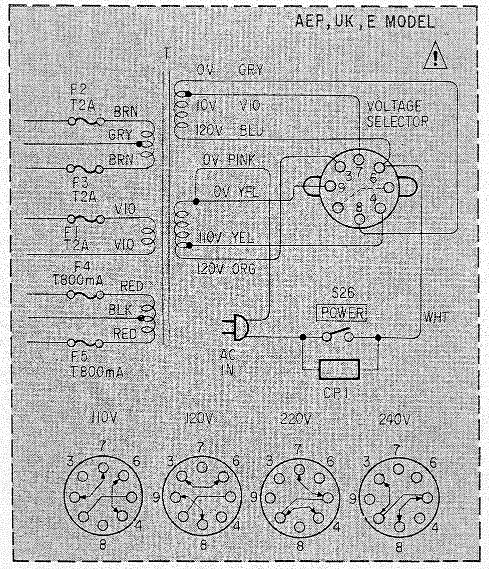

E
F
G
H
[SYSTEM-CONTROL BOARD]
IC604 HB84069
IC604 (2/3)
PM1 BRAKE SOLENOID
PM2 HEAD SOLENOID
D618 1S1555
D617 1S1555
D616 10E2
Q611 2SA1015
Q610 2SD1012
SOLENOID DRIVE
Q609 2SA1015
Q608 2SD1012
SOLENOID DRIVE
Q607 2SC1815
Q606 2SA773
SOLENOID KICK
Q604 2SD414
Q605 2SA775
POWER SUPPLY
D632 10E2
D605–608 10E2
D613 HZ11B2L
D614 HZ9A2L
D615 1S1555
IC603 (3/3)
IC603 MB84069
Q601 2SB548
POWER SUPPLY
[TRANSISTOR BOARD (1)]
[TRANSISTOR BOARD (2)]
[TRANSISTOR BOARD (3)]
TO PUSH-BUTTON-SWITCH BOARD
D631 10E2
D601–604 10E2
D609–612 10E2
Q602 2SC1815
Q603 2SD880
VOLT. REG.
CLOCK OSC
PM1
PM2
KICK
RESET
CPU
ROM/RAM
FG INPUT
IC603 (2/3)
Q626 2SC1364
L/H SWITCH
RH/L
R ON/OFF
OUTPUTS
TO SERVO BOARD
IC603 MB84069
D619 10E2
BIAS OUT
PLAY
4sec OUT
D633,634 1S1555
TO RECORD/PLAYBACK BOARD
INPUTS
MODE
SHUT-OFF (2)
S2MT
HEAD
IC604 HB84069
IC604 (3/3)
Q627 2SC1364
MUTING
PL6,7 (METER)
[FORWARD/REVERSE-SWITCH BOARD]
S25 TAPE DIRECTION
PL8 (CASSETTE)
PL5 (FWD)
PL4 (REV)
TAPE DIRECTION
Q619 2SC1364 BUFFER
D623 1S1555
Q620 2SC1364 IC DRIVER
IC604 HB84069
Q621 2SC1364 MUTING
IC604 (1/3)
Q623 NJL5141E
S20 DIRECTION MODE
FAST
[MODE-SWITCH BOARD]
[TRANSISTOR BOARD]
[MODE-INDICATION BOARD]
POWER TRANSFORMER
US MODEL
S26 POWER
CP1
AC OUTLET
AC IN

Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/8 W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- ☐ : panel designation.
- ☐ : adjustment for repair.
- ———: B+ bus.
- – – –: B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken in stop mode with a VOM (20 kΩ/V) unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref No.	Switch	Position
S10	REWIND	OFF
S11	REVERSE	OFF
S12	STOP	OFF
S13	FORWARD	OFF
S14	FAST FORWARD	OFF
S15	RECORD	OFF
S16	PAUSE	OFF
S17	REC MUTE	OFF
S18	🕒	OFF
S19	MEMORY	OFF
S20	DIRECTION MODE	⇄
S21	ACCIDENTAL-ERASURE PREVENTION (FWD)	OFF
S22	ACCIDENTAL-ERASURE PREVENTION (REV)	OFF
S23	CASSETTE	OFF
S24	TAPE COUNTER	OFF

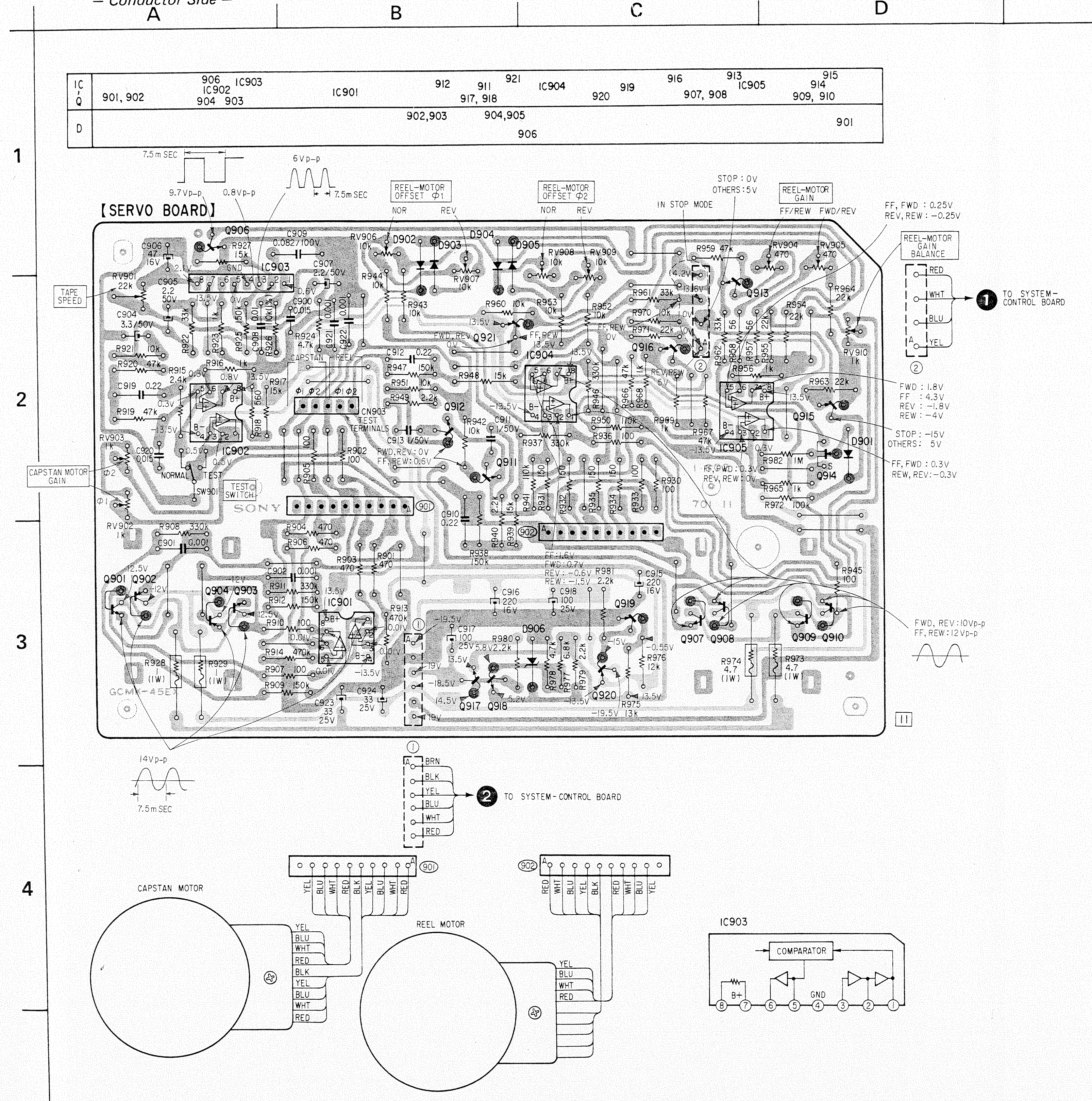
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.


AEP, UK, E MODEL
T
F2 T2A
F3 T2A
F1 T2A
F4 T800mA
F5 T800mA
BRN
GRY
V10
RED
BLK
0V GRY
10V V10
120V BLU
0V PINK
0V YEL
110V YEL
120V ORG
VOLTAGE SELECTOR
S26 POWER
WHT
AC IN
CP1
110V
120V
220V
240V

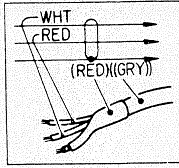
4-5. MOUNTING DIAGRAM – Servo Section –

– Conductor Side –

IC, Q	901, 902 906 IC903 IC902 904 903 IC901 912 911 921 917, 918 IC904 920 919 916 913 907, 908 IC905 915 914 909, 910
D	902,903 904,905 906 901


A
B
C
D
1
2
3
4
5
7.5m SEC
9.7Vp-p
0.8Vp-p
6Vp-p
7.5m SEC
REEL-MOTOR OFFSET Φ1
NOR
REV
REEL-MOTOR OFFSET Φ2
NOR
REV
IN STOP MODE
STOP : 0V
OTHERS : 5V
REEL-MOTOR GAIN
FF/REW
FWD/REV
FF, FWD : 0.25V
REV, REW : –0.25V
REEL-MOTOR GAIN BALANCE
【SERVO BOARD】
TAPE SPEED
CAPSTAN MOTOR GAIN
RED
WHT
BLU
YEL
TO SYSTEM-CONTROL BOARD
FWD : 1.8V
FF : 4.3V
REV : –1.8V
REW : –4V
STOP : –15V
OTHERS : 5V
FF, FWD : 0.3V
REW, REV : –0.3V
FWD, REV : 10Vp-p
FF, REW : 12Vp-p
IC901
IC902
IC903
IC904
IC905
CN903 TEST TERMINALS
TEST SWITCH
NORMAL
TEST
SW901
Q901
Q902
Q904
Q903
Q907
Q908
Q909
Q910
Q917
Q918
Q920
Q919
Q921
Q911
Q912
Q913
Q914
Q915
Q916
Q906
D901
D902
D903
D904
D905
D906
SONY
14Vp-p
7.5m SEC
BRN
BLK
YEL
BLU
WHT
RED
TO SYSTEM-CONTROL BOARD
CAPSTAN MOTOR
REEL MOTOR
IC903
COMPARATOR
B+
GND

Note:
- Color code of sleeving over the end of the jacket.


WHT
RED
(RED)((GRY))

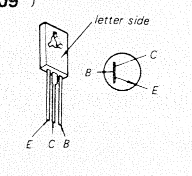
- Ⓕ : fusible resistor.
- ▒ : B+ pattern
- ▒ : B– pattern

4-6. SCHEMATIC DIAGRAM – Servo Section –

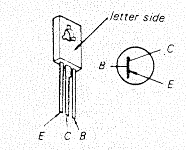
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

Q901, 903 / Q907, 909 : 2SD414

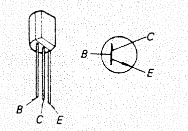

letter side
B
C
E
E C B

Q902, 904 / Q908, 910 : 2SB548

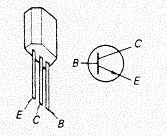

letter side
B
C
E
E C B

Q906, 916 / Q918 : 2SC1364 (2SC1815)

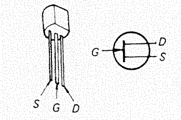
Q911–913 / Q917 : 2SC2001



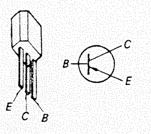
(2SC633A)



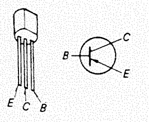
Q914: 2SK30A



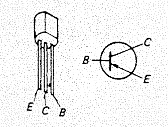
Q919, 915 / Q921 : 2SA1027R



(2SA733)

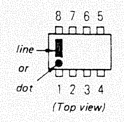


Q920: 2SA952

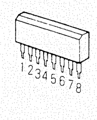


IC901: NJM4558DFA

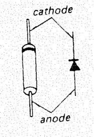
IC902, 904 / IC905 : µPC4558C


8 7 6 5
line
or
dot
1 2 3 4
(Top view)

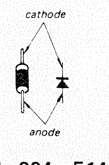
IC903: CX069



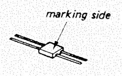
D901–905: 1S1555

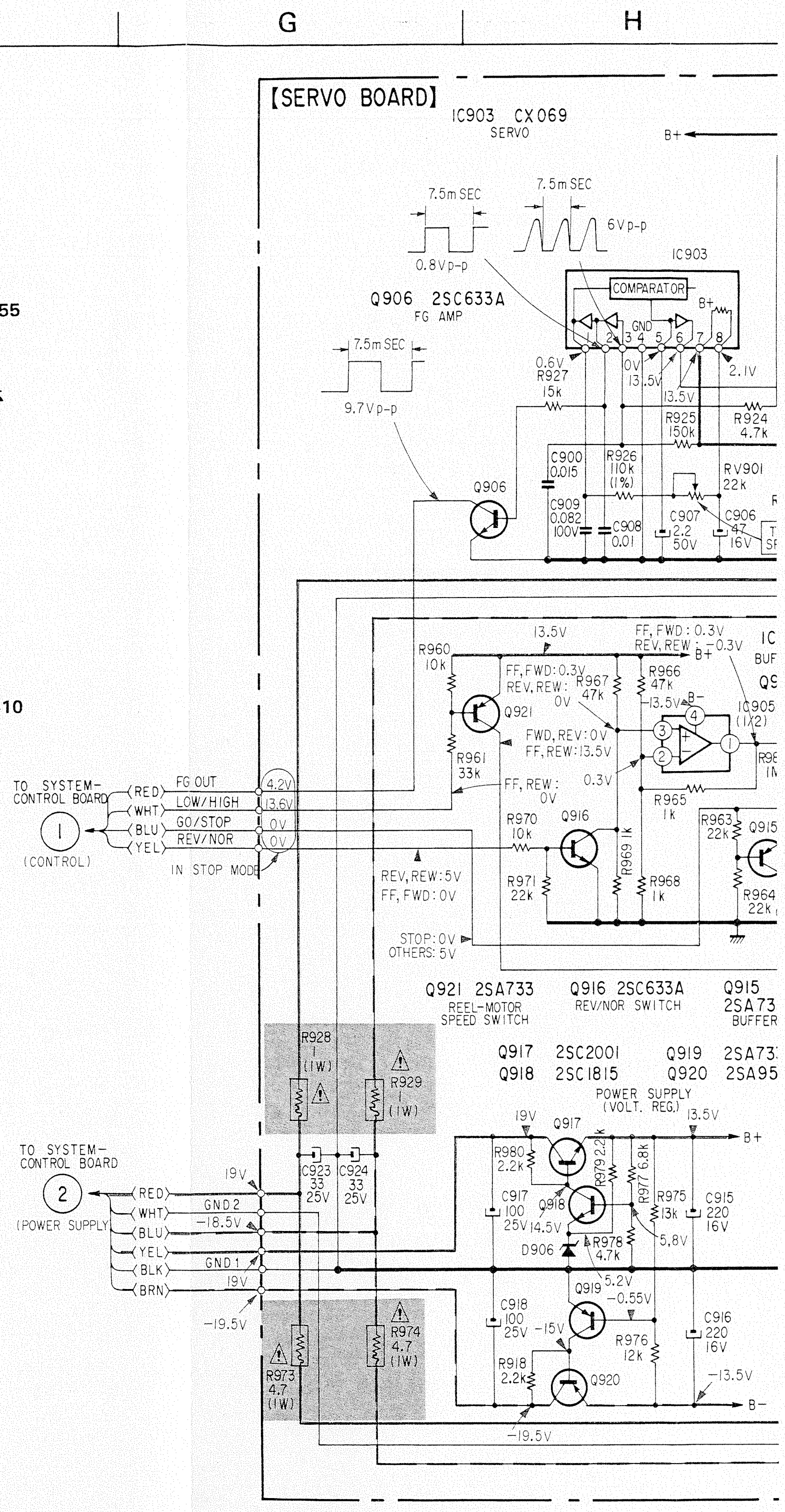

cathode
anode

D906: HZ6B2L (HZ6A2L)


cathode
anode

HE901–904: F1410

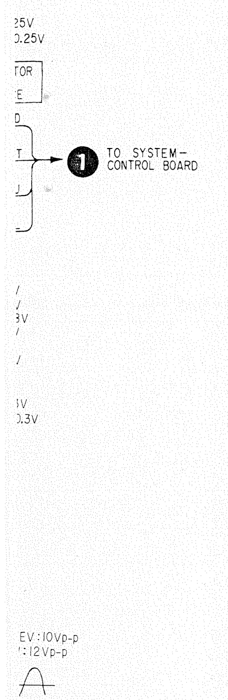

marking side


G
H
【SERVO BOARD】
IC903 CX069
SERVO
B+
7.5m SEC
7.5m SEC
6Vp-p
0.8Vp-p
IC903
COMPARATOR
GND
Q906 2SC633A
FG AMP
7.5m SEC
9.7Vp-p
0.6V
R927 15k
0V
13.5V
2.1V
13.5V
R925 150k
R924 4.7k
C900 0.015
R926 110k (1%)
RV901 22k
C909 0.082 100V
C908 0.01
C907 2.2 50V
C906 47 16V
Q906
TO SYSTEM-CONTROL BOARD
① (CONTROL)
RED
WHT
BLU
YEL
FG OUT
LOW/HIGH
GO/STOP
REV/NOR
4.2V
13.6V
0V
0V
IN STOP MODE
13.5V
R960 10k
FF, FWD : 0.3V
REV, REW : –0.3V
FF, FWD: 0.3V
REV, REW: 0V
R967 47k
R966 47k
13.5V
B+
B–
IC905 (1/2)
Q921
FWD, REV : 0V
FF, REW : 13.5V
R961 33k
FF, REW : 0V
0.3V
R965 1k
R970 10k
Q916
R969 1k
R963 22k
Q915
REV, REW : 5V
FF, FWD : 0V
R971 22k
R968 1k
R964 22k
STOP : 0V
OTHERS: 5V
Q921 2SA733
REEL-MOTOR SPEED SWITCH
Q916 2SC633A
REV/NOR SWITCH
Q915 2SA73
BUFFER
Q917 2SC2001
Q918 2SC1815
Q919 2SA73
Q920 2SA95
POWER SUPPLY (VOLT. REG.)
R928 1 (1W)
R929 1 (1W)
TO SYSTEM-CONTROL BOARD
② (POWER SUPPLY)
RED
WHT
BLU
YEL
BLK
BRN
19V
GND 2
–18.5V
GND 1
19V
–19.5V
C923 33 25V
C924 33 25V
19V
Q917
13.5V
B+
R980 2.2k
R979 2.2k
R977 6.8k
R975 13k
C915 220 16V
C917 100 25V
Q918
14.5V
D906
R978 4.7k
5.8V
5.2V
Q919
–0.55V
C918 100 25V
–15V
C916 220 16V
R976 12k
R918 2.2k
Q920
–13.5V
B–
R973 4.7 (1W)
R974 4.7 (1W)
–19.5V

Note:
- All capacitors are in µF unless otherwise noted. 50WV or less are not indicated except for ele and tantalums.
- All resistors are in ohms, 1/8 W unless otherwi kΩ: 1000 Ω, MΩ: 1000 kΩ
- ▭ : fusible resistor.
- ▭ : adjustment for repair.

4-6. SCHEMATIC DIAGRAM – Servo Section –

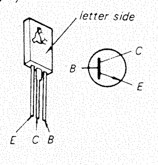
E F G H I J K


.25V
0.25V
TO SYSTEM-
CONTROL BOARD
EV:10Vp-p
:12Vp-p

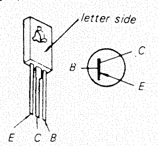
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

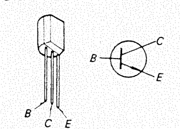
Q901, 903 / Q907, 909 : 2SD414


letter side
B
C
E
E C B

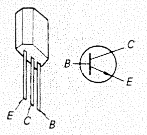
Q902, 904 / Q908, 910 : 2SB548


letter side
B
C
E
E C B

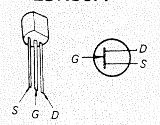
Q906, 916 / Q918 : 2SC1364 (2SC1815)
Q911–913 / Q917 : 2SC2001



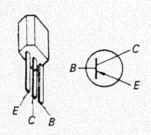
(2SC633A)



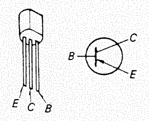
Q914: 2SK30A



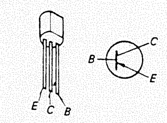
Q919, 915 / Q921 : 2SA1027R



(2SA733)

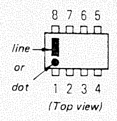


Q920: 2SA952

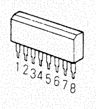


Ⓕ : fusible resistor.
: B+ pattern
: B- pattern

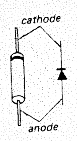
IC901: NJM4558DFA
IC902, 904 / IC905 : μPC4558C


8 7 6 5
line
or
dot
1 2 3 4
(Top view)

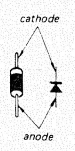
IC903: CX069



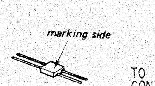
D901–905: 1S1555

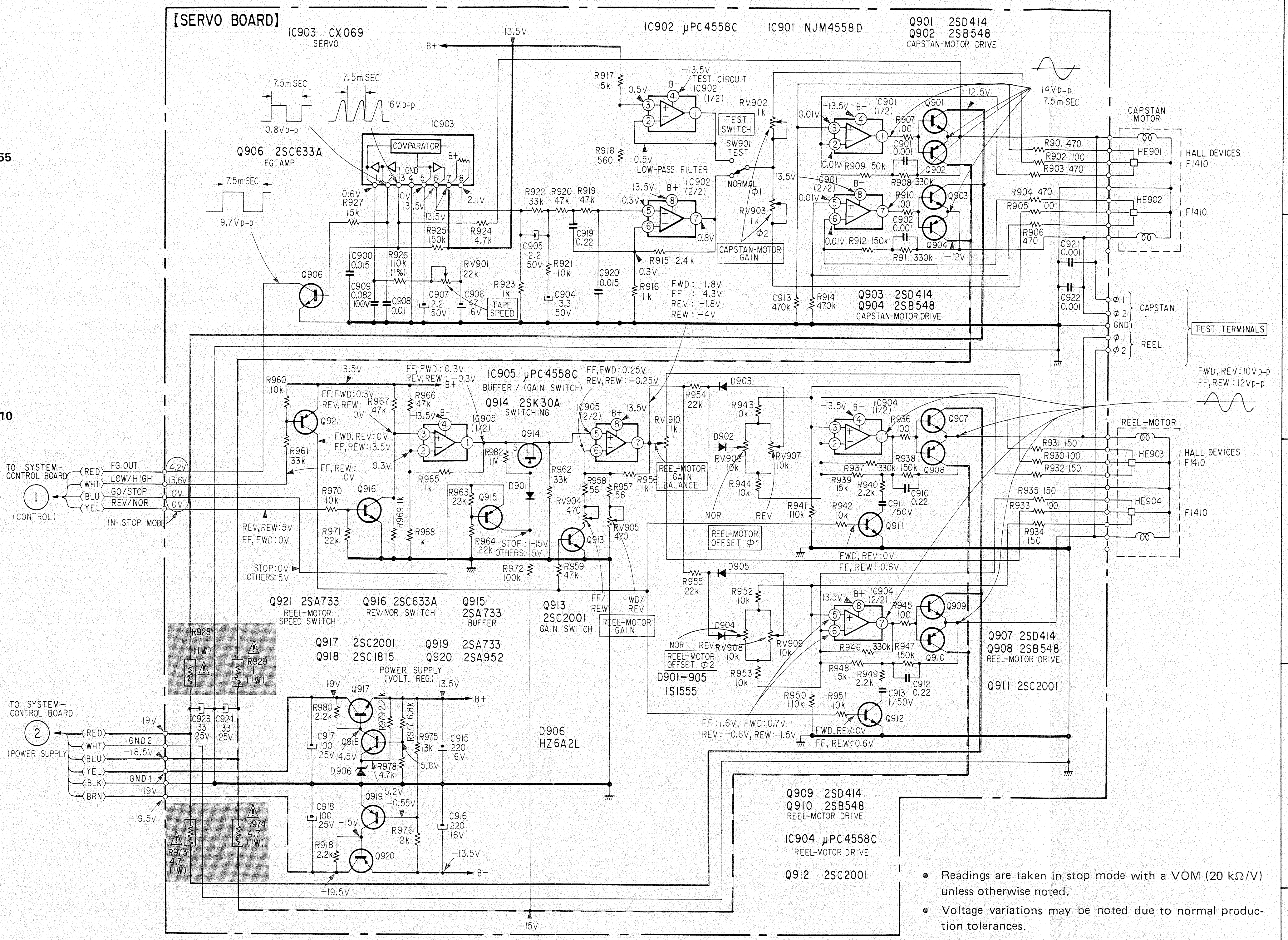

cathode
anode

D906: HZ6B2L (HZ6A2L)


cathode
anode

HE901–904: F1410


marking side


【SERVO BOARD】
IC903 CX069 SERVO
13.5V
B+
IC902 μPC4558C
IC901 NJM4558D
Q901 2SD414
Q902 2SB548
CAPSTAN-MOTOR DRIVE
7.5m SEC
0.8Vp-p
7.5m SEC
6Vp-p
IC903
COMPARATOR
GND
Q906 2SC633A
FG AMP
7.5m SEC
9.7Vp-p
0.6V
R927 15k
0V
13.5V
2.1V
R925 150k
R924 4.7k
C900 0.015
R926 110k (1%)
C909 0.082 100V
C908 0.01
C907 2.2 50V
C906 47 16V
RV901 22k
R923 1k
TAPE SPEED
C905 2.2 50V
R921 10k
C904 3.3 50V
R922 33k
R920 47k
R919 47k
C919 0.22
C920 0.015
R917 15k
R918 560
0.5V
-13.5V
TEST CIRCUIT
IC902 (1/2)
LOW-PASS FILTER
IC902 (2/2)
0.3V
0.8V
R915 2.4k
R916 1k
FWD : 1.8V
FF : 4.3V
REV : -1.8V
REW : -4V
RV902 1k
TEST SWITCH
SW901 TEST
NORMAL
Φ1
RV903 1k
Φ2
CAPSTAN-MOTOR GAIN
0.01V
IC901 (1/2)
IC901 (2/2)
R907 100
C901 0.001
R909 150k
R908 330k
R910 100
C902 0.001
R912 150k
R911 330k
-12V
12.5V
Q901
Q902
Q903
Q904
C913 470k
R914 470k
Q903 2SD414
Q904 2SB548
CAPSTAN-MOTOR DRIVE
14Vp-p
7.5m SEC
CAPSTAN MOTOR
R901 470
R902 100
R903 470
R904 470
R905 100
R906 470
HE901
HE902
HALL DEVICES F1410
F1410
C921 0.001
C922 0.001
Φ1
Φ2
GND
CAPSTAN
REEL
TEST TERMINALS
FWD, REV: 10Vp-p
FF, REW: 12Vp-p
TO SYSTEM-CONTROL BOARD
① (CONTROL)
(RED) FG OUT 4.2V
(WHT) LOW/HIGH 13.6V
(BLU) GO/STOP 0V
(YEL) REV/NOR 0V
IN STOP MODE
R960 10k
Q921
R961 33k
FF, FWD: 0.3V
REV, REW: 0V
R967 47k
R966 47k
FWD, REV: 0V
FF, REW: 13.5V
FF, REW: 0V
FF, FWD: 0.3V
REV, REW: -0.3V
IC905 μPC4558C
BUFFER / (GAIN SWITCH)
Q914 2SK30A
SWITCHING
IC905 (1/2)
IC905 (2/2)
R982 1M
Q914
R965 1k
R970 10k
Q916
R969 1k
R968 1k
R971 22k
REV, REW: 5V
FF, FWD: 0V
STOP: 0V
OTHERS: 5V
R963 22k
Q915
R964 22k
STOP: -15V
OTHERS: 5V
D901
R962 33k
R972 100k
R959 47k
RV904 470
RV905 470
R958 56
R957 56
R956 1k
Q913
FF/REW
FWD/REV
REEL-MOTOR GAIN
REEL-MOTOR GAIN BALANCE
RV910 1k
FF, FWD: 0.25V
REV, REW: -0.25V
Q921 2SA733
REEL-MOTOR SPEED SWITCH
Q916 2SC633A
REV/NOR SWITCH
Q915 2SA733
BUFFER
Q913 2SC2001
GAIN SWITCH
Q917 2SC2001
Q918 2SC1815
Q919 2SA733
Q920 2SA952
POWER SUPPLY (VOLT. REG.)
R928 1 (1W)
R929 1 (1W)
TO SYSTEM-CONTROL BOARD
② (POWER SUPPLY)
(RED) 19V
(WHT) GND 2
(BLU) -18.5V
(YEL)
(BLK) GND 1
(BRN) 19V
-19.5V
C923 33 25V
C924 33 25V
R980 2.2k
Q917
R979 2.2k
R977 6.8k
R975 13k
C915 220 16V
C917 100 25V
Q918
14.5V
D906
R978 4.7k
5.8V
5.2V
Q919
-0.55V
C918 100 25V
-15V
R976 12k
C916 220 16V
R918 2.2k
Q920
-13.5V
B-
R973 4.7 (1W)
R974 4.7 (1W)
-15V
D906 HZ6A2L
D903
R954 22k
R943 10k
D902
RV906 10k
RV907 10k
R944 10k
NOR
REV
REEL-MOTOR OFFSET Φ1
IC904 (1/2)
R936 100
Q907
Q908
R937 330k
R938 150k
R939 15k
R940 2.2k
C910 0.22
C911 1/50V
R941 110k
R942 10k
Q911
FWD, REV: 0V
FF, REW: 0.6V
D905
R955 22k
R952 10k
D904
RV908 10k
RV909 10k
R953 10k
REEL-MOTOR OFFSET Φ2
D901–905 1S1555
IC904 (2/2)
R945 100
Q909
Q910
R946 330k
R947 150k
R948 15k
R949 2.2k
C912 0.22
C913 1/50V
R950 110k
R951 10k
Q912
FF: 1.6V, FWD: 0.7V
REV: -0.6V, REW: -1.5V
REEL-MOTOR
R931 150
R930 100
R932 150
R935 150
R933 100
R934 150
HE903
HE904
HALL DEVICES F1410
F1410
Q907 2SD414
Q908 2SB548
REEL-MOTOR DRIVE
Q911 2SC2001
Q909 2SD414
Q910 2SB548
REEL-MOTOR DRIVE
IC904 μPC4558C
REEL-MOTOR DRIVE
Q912 2SC2001
1
2
3
4
5

- Readings are taken in stop mode with a VOM (20 kΩ/V) unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
SW901	NORMAL/TEST	NORMAL

Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/8 W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- ⏛ : fusible resistor.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- – – – : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.

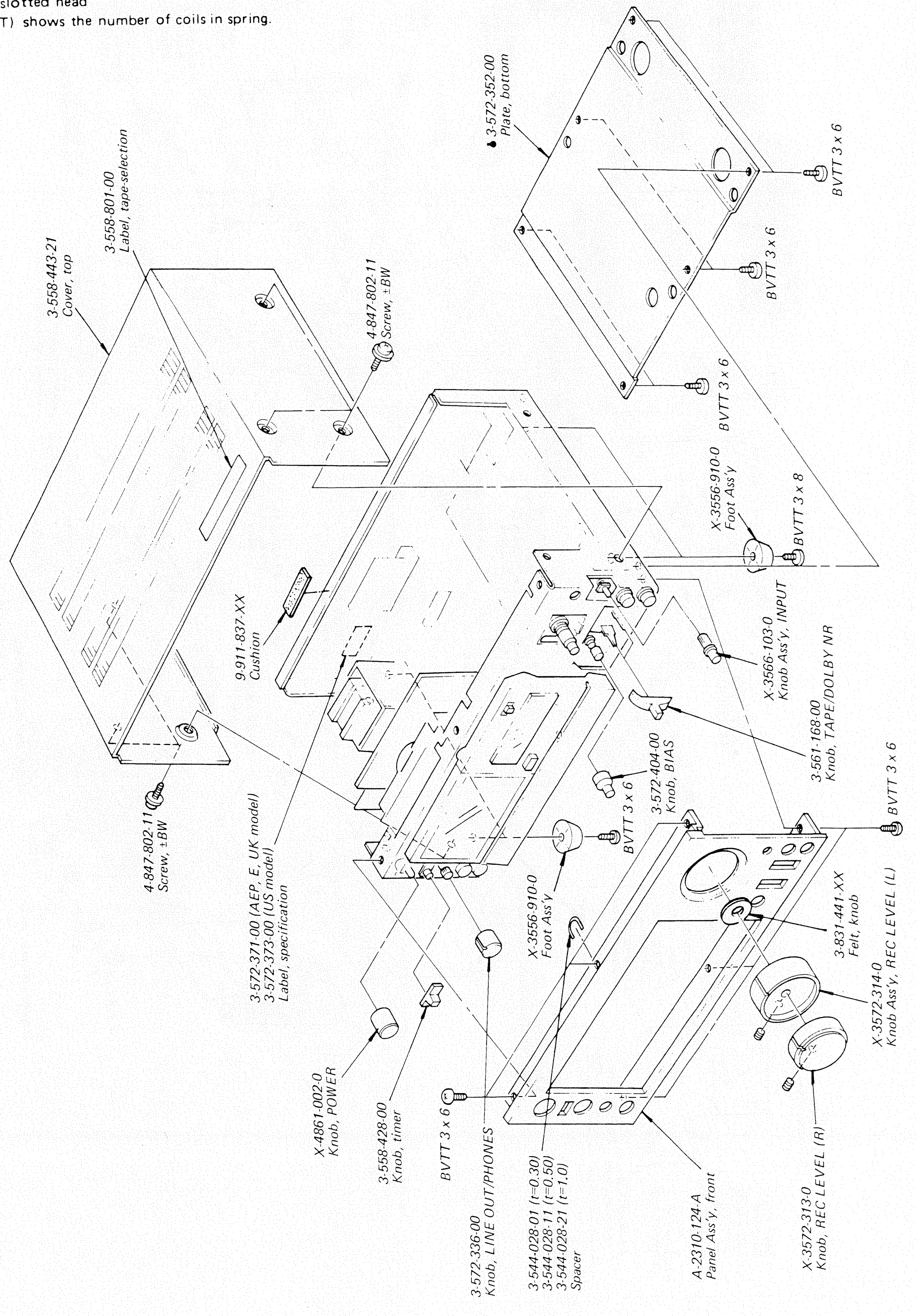
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

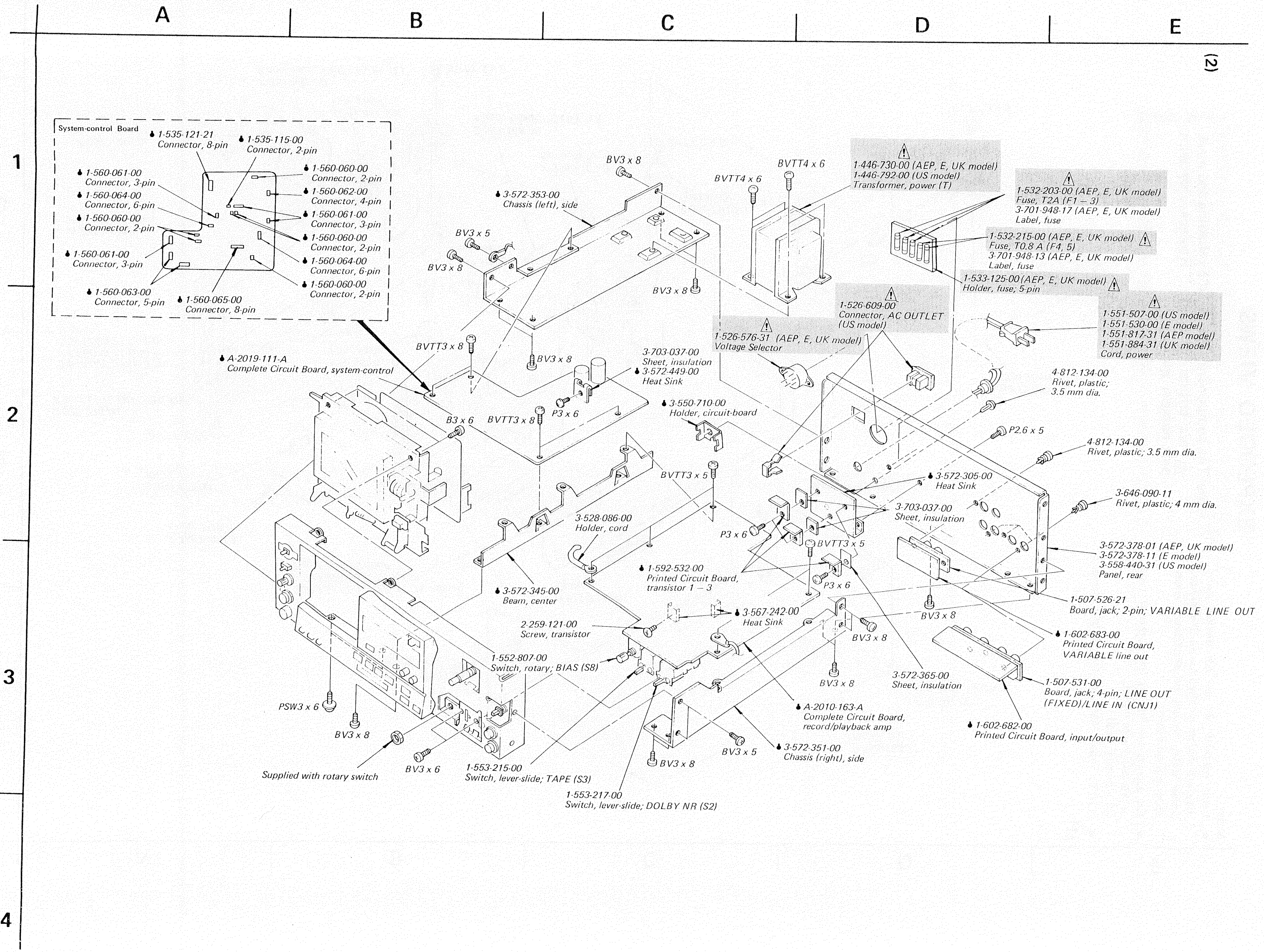
SECTION 5
EXPLODED VIEWS

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

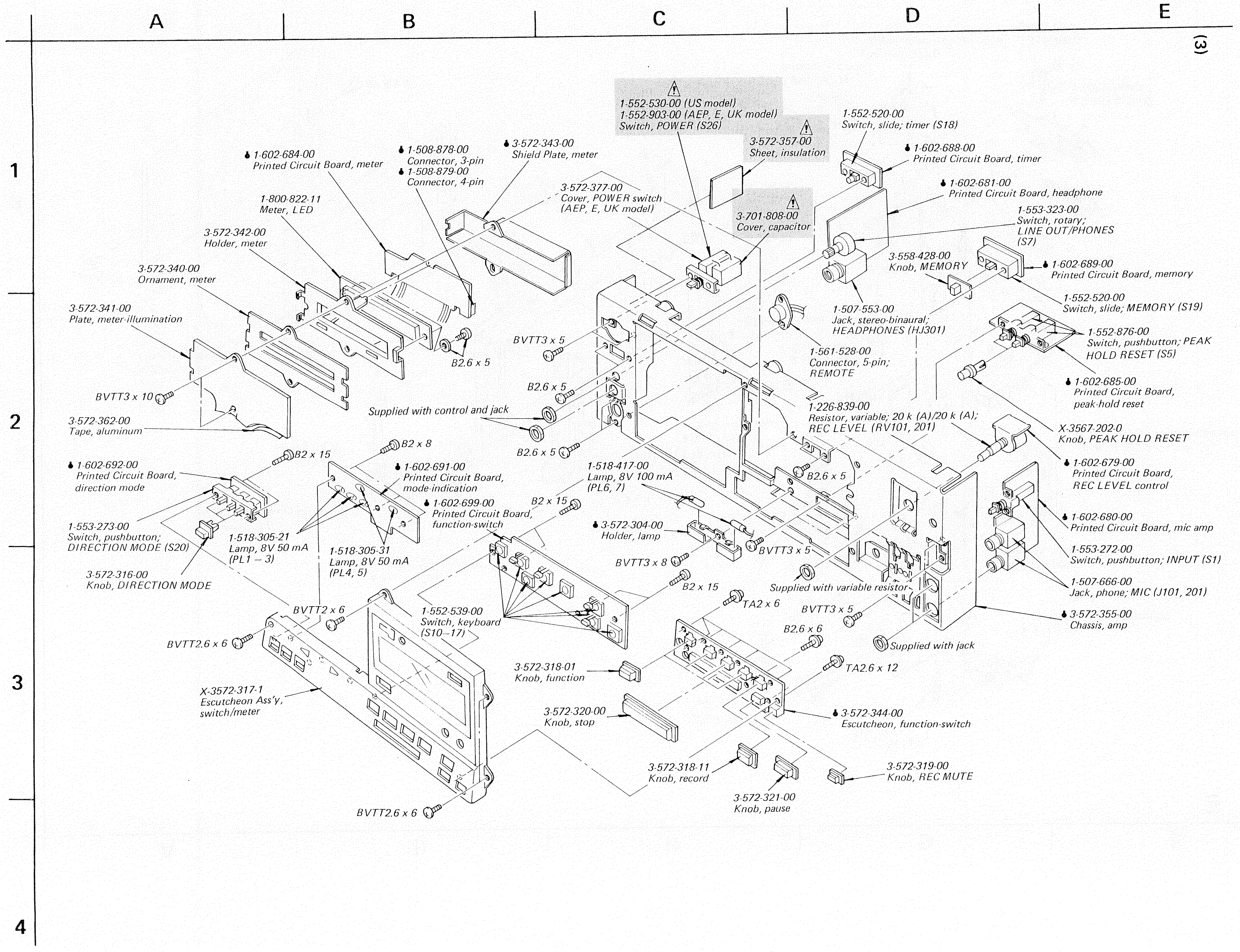
Note:
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted. (–) = slotted head
- (□□T) shows the number of coils in spring.

(1)

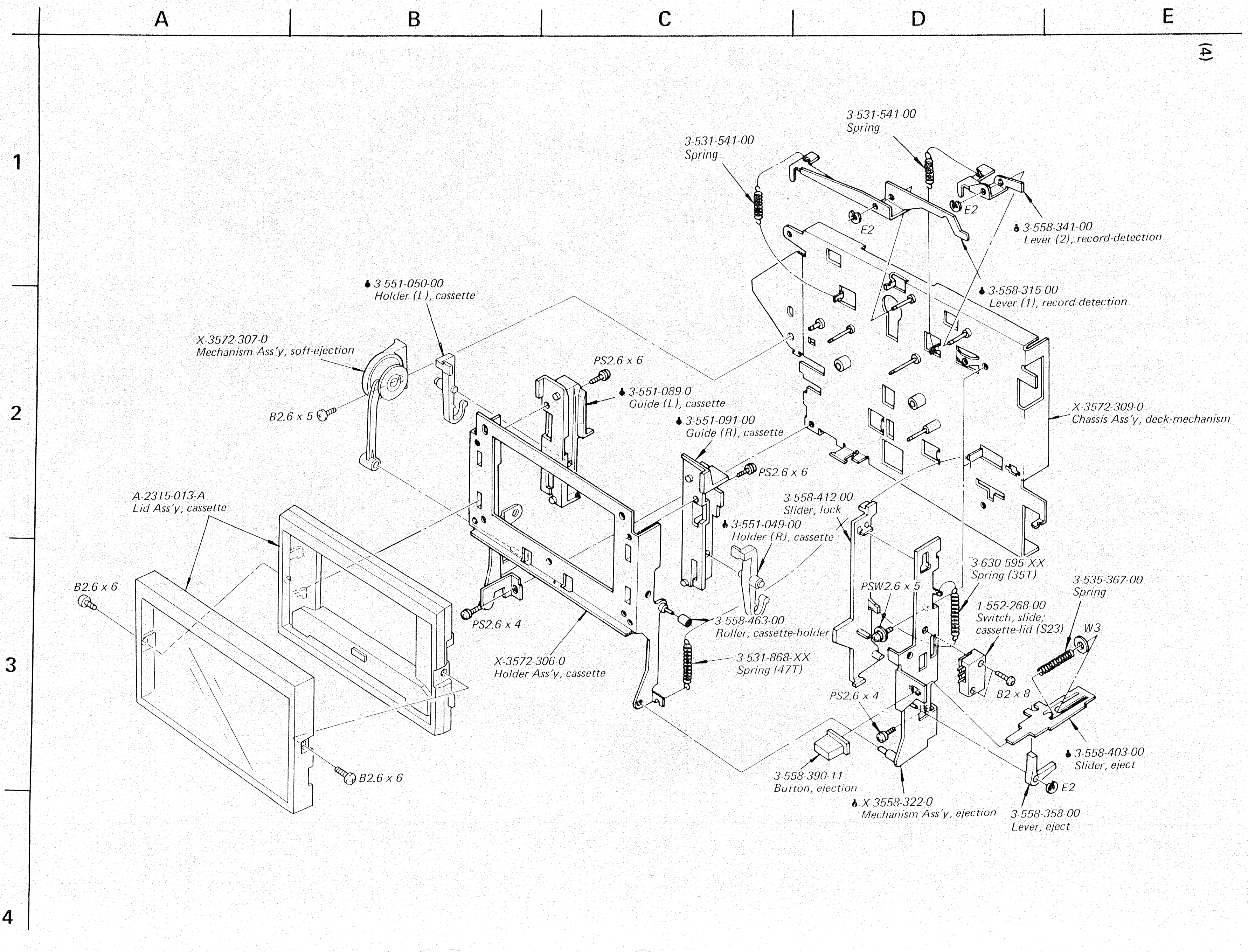

3-558-443-21 Cover, top
3-558-801-00 Label, tape-selection
4-847-802-11 Screw, ±BW
♦ 3-572-352-00 Plate, bottom
BVTT 3 x 6
BVTT 3 x 6
BVTT 3 x 6
X-3556-910-0 Foot Ass'y
BVTT 3 x 8
9-911-837-XX Cushion
X-3566-103-0 Knob Ass'y, INPUT
3-561-168-00 Knob, TAPE/DOLBY NR
3-572-404-00 Knob, BIAS
BVTT 3 x 6
BVTT 3 x 6
4-847-802-11 Screw, ±BW
3-572-371-00 (AEP, E, UK model)
3-572-373-00 (US model)
Label, specification
X-3556-910-0 Foot Ass'y
3-831-441-XX Felt, knob
X-3572-314-0 Knob Ass'y, REC LEVEL (L)
X-4861-002-0 Knob, POWER
3-558-428-00 Knob, timer
BVTT 3 x 6
3-572-336-00 Knob, LINE OUT/PHONES
3-544-028-01 (t=0.30)
3-544-028-11 (t=0.50)
3-544-028-21 (t=1.0)
Spacer
A-2310-124-A Panel Ass'y, front
X-3572-313-0 Knob, REC LEVEL (R)

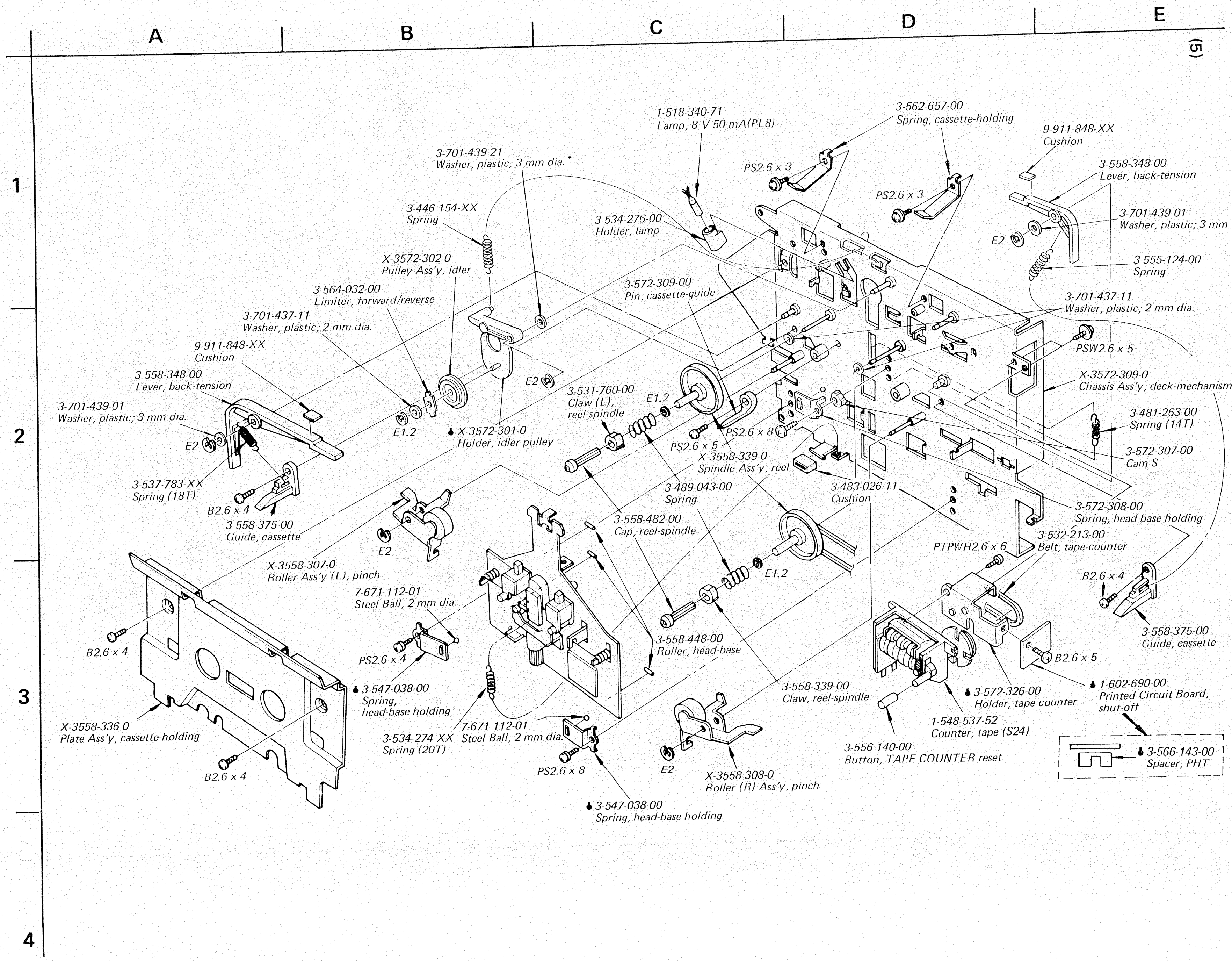

A
B
C
D
E
1
2
3
4
(2)
System-control Board
1-535-121-21
Connector, 8-pin
1-535-115-00
Connector, 2-pin
1-560-061-00
Connector, 3-pin
1-560-064-00
Connector, 6-pin
1-560-060-00
Connector, 2-pin
1-560-061-00
Connector, 3-pin
1-560-063-00
Connector, 5-pin
1-560-065-00
Connector, 8-pin
1-560-060-00
Connector, 2-pin
1-560-062-00
Connector, 4-pin
1-560-061-00
Connector, 3-pin
1-560-060-00
Connector, 2-pin
1-560-064-00
Connector, 6-pin
1-560-060-00
Connector, 2-pin
A-2019-111-A
Complete Circuit Board, system-control
BV3 x 8
3-572-353-00
Chassis (left), side
BV3 x 5
BV3 x 8
BV3 x 8
BVTT4 x 6
BVTT4 x 6
⚠
1-446-730-00 (AEP, E, UK model)
1-446-792-00 (US model)
Transformer, power (T)
⚠
1-532-203-00 (AEP, E, UK model)
Fuse, T2A (F1 – 3)
3-701-948-17 (AEP, E, UK model)
Label, fuse
1-532-215-00 (AEP, E, UK model) ⚠
Fuse, T0.8 A (F4, 5)
3-701-948-13 (AEP, E, UK model)
Label, fuse
1-533-125-00 (AEP, E, UK model) ⚠
Holder, fuse; 5-pin
⚠
1-526-609-00
Connector, AC OUTLET
(US model)
⚠
1-526-576-31 (AEP, E, UK model)
Voltage Selector
⚠
1-551-507-00 (US model)
1-551-530-00 (E model)
1-551-817-31 (AEP model)
1-551-884-31 (UK model)
Cord, power
BVTT3 x 8
BV3 x 8
3-703-037-00
Sheet, insulation
3-572-449-00
Heat Sink
B3 x 6
BVTT3 x 8
P3 x 6
3-550-710-00
Holder, circuit-board
4-812-134-00
Rivet, plastic;
3.5 mm dia.
P2.6 x 5
4-812-134-00
Rivet, plastic; 3.5 mm dia.
3-572-305-00
Heat Sink
BVTT3 x 5
3-646-090-11
Rivet, plastic; 4 mm dia.
3-703-037-00
Sheet, insulation
3-528-086-00
Holder, cord
P3 x 6
BVTT3 x 5
3-572-378-01 (AEP, UK model)
3-572-378-11 (E model)
3-558-440-31 (US model)
Panel, rear
1-592-532-00
Printed Circuit Board,
transistor 1 – 3
P3 x 6
3-572-345-00
Beam, center
3-567-242-00
Heat Sink
BV3 x 8
1-507-526-21
Board, jack; 2-pin; VARIABLE LINE OUT
2-259-121-00
Screw, transistor
BV3 x 8
1-602-683-00
Printed Circuit Board,
VARIABLE line out
1-552-807-00
Switch, rotary; BIAS (S8)
BV3 x 8
3-572-365-00
Sheet, insulation
1-507-531-00
Board, jack; 4-pin; LINE OUT
(FIXED)/LINE IN (CNJ1)
PSW3 x 6
A-2010-163-A
Complete Circuit Board,
record/playback amp
1-602-682-00
Printed Circuit Board, input/output
BV3 x 8
BV3 x 5
3-572-351-00
Chassis (right), side
BV3 x 6
Supplied with rotary switch
1-553-215-00
Switch, lever-slide; TAPE (S3)
BV3 x 8
1-553-217-00
Switch, lever-slide; DOLBY NR (S2)

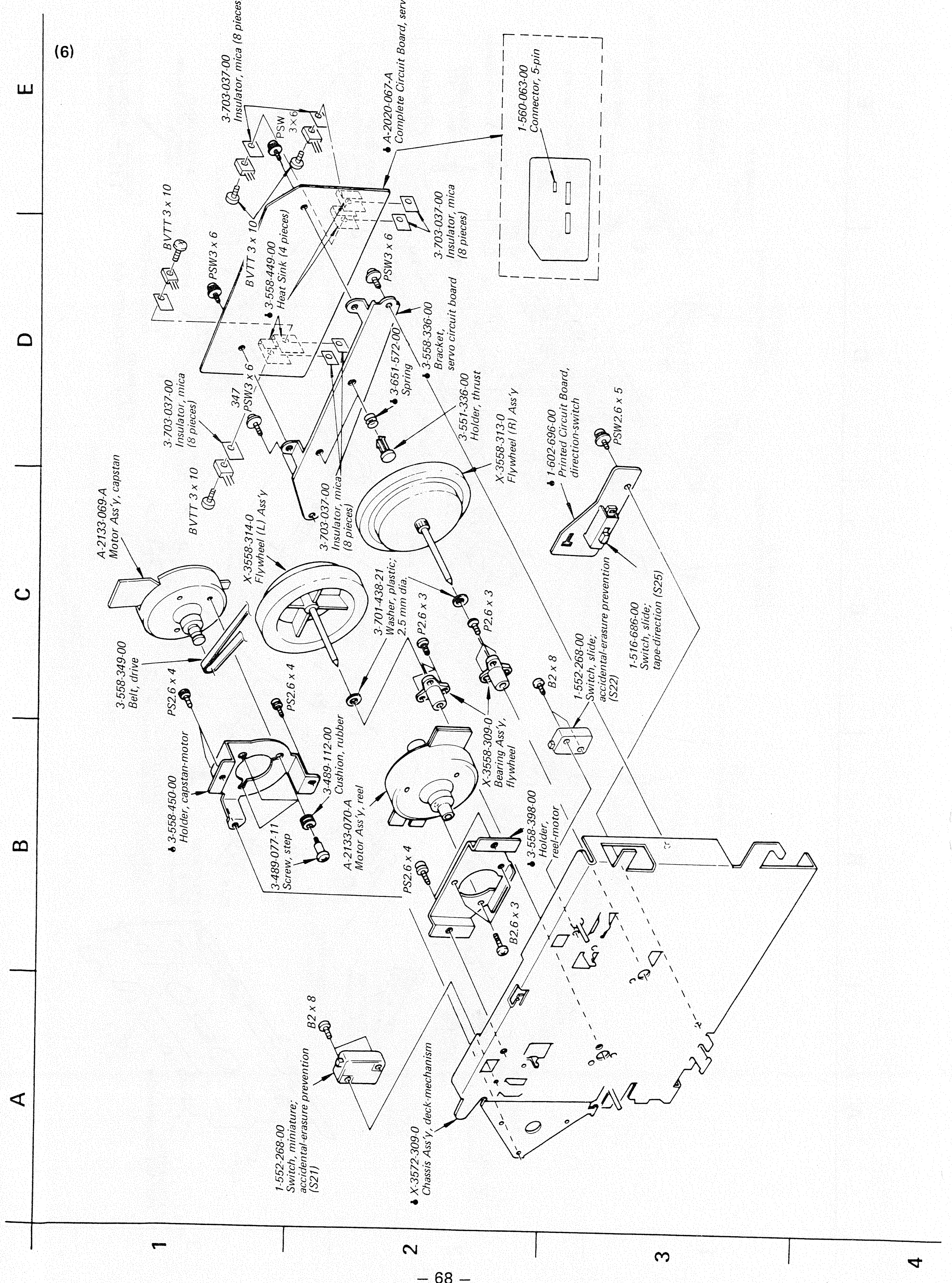
(3)


A
B
C
D
E
1
2
3
4
⚠ 1-552-530-00 (US model)
1-552-903-00 (AEP, E, UK model)
Switch, POWER (S26)
⚠ 3-572-357-00
Sheet, insulation
⚠ 3-701-808-00
Cover, capacitor
1-552-520-00
Switch, slide; timer (S18)
♦ 1-602-688-00
Printed Circuit Board, timer
♦ 1-602-681-00
Printed Circuit Board, headphone
1-553-323-00
Switch, rotary;
LINE OUT/PHONES
(S7)
3-558-428-00
Knob, MEMORY
♦ 1-602-689-00
Printed Circuit Board, memory
1-552-520-00
Switch, slide; MEMORY (S19)
1-552-876-00
Switch, pushbutton; PEAK
HOLD RESET (S5)
♦ 1-602-685-00
Printed Circuit Board,
peak-hold reset
X-3567-202-0
Knob, PEAK HOLD RESET
♦ 1-602-679-00
Printed Circuit Board,
REC LEVEL control
♦ 1-602-680-00
Printed Circuit Board, mic amp
1-553-272-00
Switch, pushbutton; INPUT (S1)
1-507-666-00
Jack, phone; MIC (J101, 201)
♦ 3-572-355-00
Chassis, amp
1-507-553-00
Jack, stereo-binaural;
HEADPHONES (HJ301)
1-561-528-00
Connector, 5-pin;
REMOTE
1-226-839-00
Resistor, variable; 20 k (A)/20 k (A);
REC LEVEL (RV101, 201)
♦ 1-602-684-00
Printed Circuit Board, meter
♦ 1-508-878-00
Connector, 3-pin
♦ 1-508-879-00
Connector, 4-pin
♦ 3-572-343-00
Shield Plate, meter
3-572-377-00
Cover, POWER switch
(AEP, E, UK model)
1-800-822-11
Meter, LED
3-572-342-00
Holder, meter
3-572-340-00
Ornament, meter
3-572-341-00
Plate, meter-illumination
BVTT3 x 10
3-572-362-00
Tape, aluminum
B2.6 x 5
BVTT3 x 5
B2.6 x 5
Supplied with control and jack
B2.6 x 5
B2.6 x 5
B2 x 8
B2 x 15
♦ 1-602-692-00
Printed Circuit Board,
direction mode
1-553-273-00
Switch, pushbutton;
DIRECTION MODE (S20)
3-572-316-00
Knob, DIRECTION MODE
1-518-305-21
Lamp, 8V 50 mA
(PL1 – 3)
1-518-305-31
Lamp, 8V 50 mA
(PL4, 5)
♦ 1-602-691-00
Printed Circuit Board,
mode-indication
♦ 1-602-699-00
Printed Circuit Board,
function-switch
B2 x 15
1-518-417-00
Lamp, 8V 100 mA
(PL6, 7)
♦ 3-572-304-00
Holder, lamp
BVTT3 x 8
BVTT3 x 5
B2 x 15
Supplied with variable resistor
TA2 x 6
BVTT3 x 5
B2.6 x 6
Supplied with jack
TA2.6 x 12
BVTT2 x 6
1-552-539-00
Switch, keyboard
(S10 – 17)
BVTT2.6 x 6
X-3572-317-1
Escutcheon Ass'y,
switch/meter
3-572-318-01
Knob, function
3-572-320-00
Knob, stop
♦ 3-572-344-00
Escutcheon, function-switch
3-572-318-11
Knob, record
3-572-321-00
Knob, pause
3-572-319-00
Knob, REC MUTE
BVTT2.6 x 6

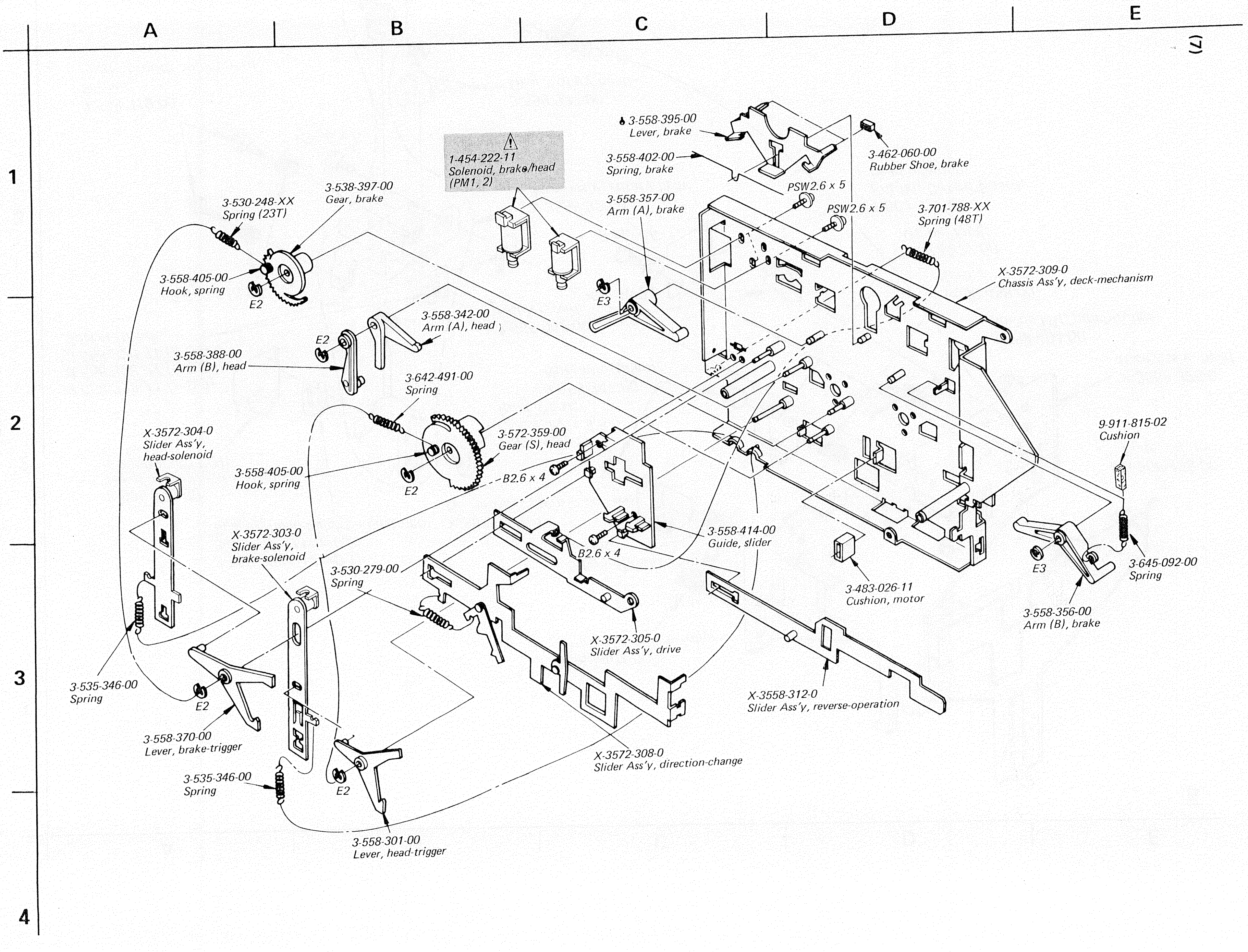
(4)

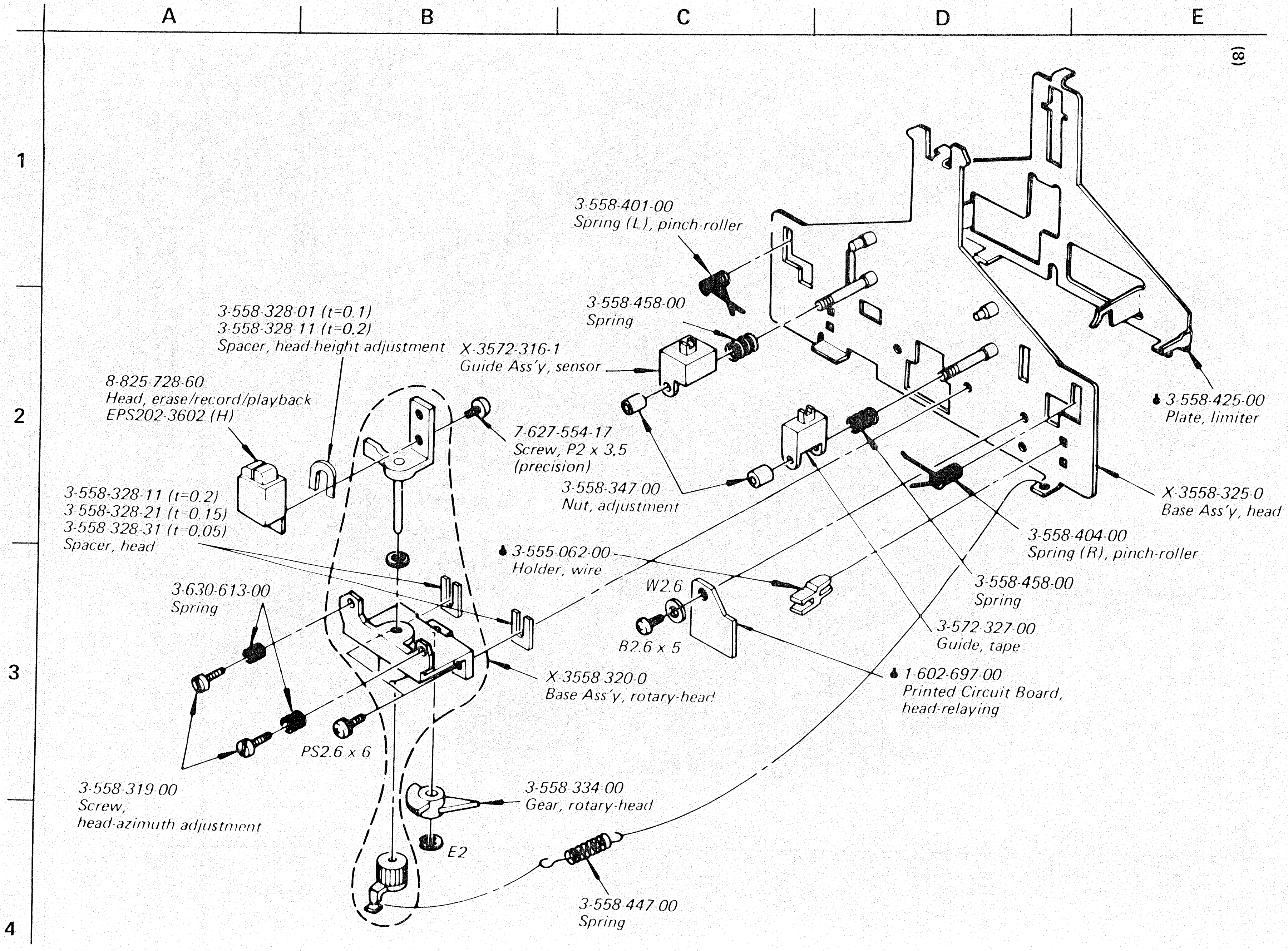

A
B
C
D
E
1
2
3
4
3-531-541-00
Spring
3-531-541-00
Spring
E2
E2
♦ 3-558-341-00
Lever (2), record-detection
♦ 3-558-315-00
Lever (1), record-detection
♦ 3-551-050-00
Holder (L), cassette
X-3572-307-0
Mechanism Ass'y, soft-ejection
PS2.6 x 6
♦ 3-551-089-0
Guide (L), cassette
B2.6 x 5
♦ 3-551-091-00
Guide (R), cassette
X-3572-309-0
Chassis Ass'y, deck-mechanism
PS2.6 x 6
A-2315-013-A
Lid Ass'y, cassette
3-558-412-00
Slider, lock
♦ 3-551-049-00
Holder (R), cassette
3-630-595-XX
Spring (35T)
B2.6 x 6
PSW2.6 x 5
3-535-367-00
Spring
1-552-268-00
Switch, slide;
cassette-lid (S23)
W3
PS2.6 x 4
3-558-463-00
Roller, cassette-holder
X-3572-306-0
Holder Ass'y, cassette
3-531-868-XX
Spring (47T)
PS2.6 x 4
B2 x 8
♦ 3-558-403-00
Slider, eject
B2.6 x 6
3-558-390-11
Button, ejection
E2
♦ X-3558-322-0
Mechanism Ass'y, ejection
3-558-358-00
Lever, eject


A
B
C
D
E
1
2
3
4
(5)
1-518-340-71
Lamp, 8 V 50 mA(PL8)
3-562-657-00
Spring, cassette-holding
9-911-848-XX
Cushion
3-558-348-00
Lever, back-tension
3-701-439-01
Washer, plastic; 3 mm dia.
E2
3-555-124-00
Spring
3-701-437-11
Washer, plastic; 2 mm dia.
PSW2.6 x 5
X-3572-309-0
Chassis Ass'y, deck-mechanism
3-481-263-00
Spring (14T)
3-572-307-00
Cam S
3-572-308-00
Spring, head-base holding
3-532-213-00
Belt, tape-counter
PTPWH2.6 x 6
B2.6 x 4
3-558-375-00
Guide, cassette
B2.6 x 5
1-602-690-00
Printed Circuit Board, shut-off
3-566-143-00
Spacer, PHT
3-572-326-00
Holder, tape counter
1-548-537-52
Counter, tape (S24)
3-556-140-00
Button, TAPE COUNTER reset
3-558-339-00
Claw, reel-spindle
X-3558-308-0
Roller (R) Ass'y, pinch
E2
3-547-038-00
Spring, head-base holding
PS2.6 x 8
7-671-112-01
Steel Ball, 2 mm dia.
3-534-274-XX
Spring (20T)
3-547-038-00
Spring,
head-base holding
PS2.6 x 4
7-671-112-01
Steel Ball, 2 mm dia.
X-3558-307-0
Roller Ass'y (L), pinch
E2
3-558-448-00
Roller, head-base
3-558-482-00
Cap, reel-spindle
E1.2
3-489-043-00
Spring
3-483-026-11
Cushion
X-3558-339-0
Spindle Ass'y, reel
PS2.6 x 5
PS2.6 x 8
3-531-760-00
Claw (L),
reel-spindle
E1.2
3-572-309-00
Pin, cassette-guide
3-534-276-00
Holder, lamp
PS2.6 x 3
PS2.6 x 3
3-701-439-21
Washer, plastic; 3 mm dia.
3-446-154-XX
Spring
X-3572-302-0
Pulley Ass'y, idler
3-564-032-00
Limiter, forward/reverse
3-701-437-11
Washer, plastic; 2 mm dia.
9-911-848-XX
Cushion
3-558-348-00
Lever, back-tension
3-701-439-01
Washer, plastic; 3 mm dia.
E2
3-537-783-XX
Spring (18T)
B2.6 x 4
3-558-375-00
Guide, cassette
E1.2
X-3572-301-0
Holder, idler-pulley
E2
X-3558-336-0
Plate Ass'y, cassette-holding
B2.6 x 4
B2.6 x 4


(6)
A
B
C
D
E
1
2
3
4
3-703-037-00 Insulator, mica (8 pieces)
A-2020-067-A Complete Circuit Board, servo
1-560-063-00 Connector, 5-pin
PSW 3×6
BVTT 3 x 10
PSW3 x 6
BVTT 3 x 10
3-558-449-00 Heat Sink (4 pieces)
PSW3 x 6
3-703-037-00 Insulator, mica (8 pieces)
3-558-336-00 Bracket, servo circuit board
3-651-572-00 Spring
3-703-037-00 Insulator, mica (8 pieces)
347
PSW3 x 6
3-551-336-00 Holder, thrust
X-3558-313-0 Flywheel (R) Ass'y
1-602-696-00 Printed Circuit Board, direction-switch
PSW2.6 x 5
BVTT 3 x 10
3-703-037-00 Insulator, mica (8 pieces)
A-2133-069-A Motor Ass'y, capstan
X-3558-314-0 Flywheel (L) Ass'y
3-701-438-21 Washer, plastic; 2.5 mm dia.
P2.6 x 3
P2.6 x 3
3-558-349-00 Belt, drive
PS2.6 x 4
PS2.6 x 4
3-489-112-00 Cushion, rubber
X-3558-309-0 Bearing Ass'y, flywheel
B2 x 8
1-552-268-00 Switch, slide; accidental-erasure prevention (S22)
1-516-686-00 Switch, slide; tape-direction (S25)
3-558-450-00 Holder, capstan-motor
3-489-077-11 Screw, step
A-2133-070-A Motor Ass'y, reel
3-558-398-00 Holder, reel-motor
PS2.6 x 4
B2.6 x 3
B2 x 8
1-552-268-00 Switch, miniature; accidental-erasure prevention (S21)
X-3572-309-0 Chassis Ass'y, deck-mechanism

(7)


A
B
C
D
E
1
2
3
4
3-558-395-00
Lever, brake
3-462-060-00
Rubber Shoe, brake
3-558-402-00
Spring, brake
1-454-222-11
Solenoid, brake/head
(PM1, 2)
3-538-397-00
Gear, brake
3-530-248-XX
Spring (23T)
3-558-357-00
Arm (A), brake
PSW2.6 x 5
PSW2.6 x 5
3-701-788-XX
Spring (48T)
X-3572-309-0
Chassis Ass'y, deck-mechanism
3-558-405-00
Hook, spring
E2
E3
3-558-342-00
Arm (A), head
3-558-388-00
Arm (B), head
3-642-491-00
Spring
3-572-359-00
Gear (S), head
X-3572-304-0
Slider Ass'y,
head-solenoid
3-558-405-00
Hook, spring
B2.6 x 4
E2
9-911-815-02
Cushion
3-558-414-00
Guide, slider
B2.6 x 4
X-3572-303-0
Slider Ass'y,
brake-solenoid
3-530-279-00
Spring
3-645-092-00
Spring
E3
3-483-026-11
Cushion, motor
3-558-356-00
Arm (B), brake
X-3572-305-0
Slider Ass'y, drive
3-535-346-00
Spring
E2
3-558-370-00
Lever, brake-trigger
X-3558-312-0
Slider Ass'y, reverse-operation
X-3572-308-0
Slider Ass'y, direction-change
3-535-346-00
Spring
E2
3-558-301-00
Lever, head-trigger


A
B
C
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E
1
2
3
4
(8)
3-558-401-00
Spring (L), pinch-roller
3-558-458-00
Spring
X-3572-316-1
Guide Ass'y, sensor
3-558-328-01 (t=0.1)
3-558-328-11 (t=0.2)
Spacer, head-height adjustment
8-825-728-60
Head, erase/record/playback
EPS202-3602 (H)
7-627-554-17
Screw, P2 x 3.5
(precision)
3-558-347-00
Nut, adjustment
3-558-328-11 (t=0.2)
3-558-328-21 (t=0.15)
3-558-328-31 (t=0.05)
Spacer, head
● 3-555-062-00
Holder, wire
3-630-613-00
Spring
W2.6
B2.6 x 5
X-3558-320-0
Base Ass'y, rotary-head
PS2.6 x 6
3-558-319-00
Screw,
head-azimuth adjustment
3-558-334-00
Gear, rotary-head
E2
3-558-447-00
Spring
● 3-558-425-00
Plate, limiter
X-3558-325-0
Base Ass'y, head
3-558-404-00
Spring (R), pinch-roller
3-558-458-00
Spring
3-572-327-00
Guide, tape
● 1-602-697-00
Printed Circuit Board,
head-relaying

SECTION 6
ELECTRICAL PARTS LIST

SEMICONDUCTORS

Transistors

Ref. No.	*Part No.*	*Description*
Q101, 201	8-729-334-58	2SC1345
Q102, 202	8-729-113-82	2SA1138
Q103, 203	8-729-167-62	2SC2676
Q104, 204	8-729-113-82	2SA1138
⇒Q105, 205	8-729-663-47	2SC1364
⇒Q106, 206	8-729-663-47	2SC1364
Q107, 207	8-729-100-13	2SC2001
⇒Q108, 208	8-729-663-47	2SC1364
⇒Q109, 209		
⇒Q110, 210		
Q301, 302	8-729-203-04	2SK30A
Q303	8-729-141-43	2SD414
Q304	8-729-154-83	2SB548
⇒Q305	8-729-663-47	2SC1364
⇒Q306	8-729-384-48	2SA844
Q307	8-729-167-62	2SC2676
Q308	8-729-113-82	2SA1138
⇒Q309, 310	8-729-612-77	2SA1027R
Q311, 312	8-729-663-47	2SC1364
Q313	8-729-612-77	2SA1027R
Q314, 315	8-729-663-47	2SC1364
Q401	8-729-101-31	N13T1
Q402	8-729-663-47	2SC1364
Q403–406	8-729-195-23	2SA952
Q601	8-729-154-83	2SB548
⇒Q602	8-729-663-47	2SC1364
Q603	8-729-217-34	2SC1173
Q604	8-729-141-43	2SD414
⇒Q605	8-729-247-33	2SA473
Q606	8-729-468-43	2SA684
⇒Q607	8-729-663-47	2SC1364
Q608, 610	8-729-100-13	2SC2001
⇒Q609, 611	8-729-612-77	2SA1027R
Q613–618	8-729-663-47	2SC1364
Q619–622		
Q623	8-719-751-42	NJL5141E
Q624	8-729-101-13	PH103
Q626, 627	8-729-663-47	2SC1364
Q901, 903	8-729-141-43	2SD414
Q902, 904	8-729-154-83	2SB548
⇒Q906	8-729-633-47	2SC1364
Q907, 909	8-729-141-43	2SD414
Q908, 910	8-729-154-83	2SB548
Q911–913	8-729-100-13	2SC2001
Q914	8-729-203-04	2SK30A
⇒Q915	8-729-612-77	2SA1027R
⇒Q916	8-729-633-47	2SC1364
Q917	8-729-100-13	2SC2001
⇒Q918	8-729-663-47	2SC1364
⇒Q919	8-729-612-77	2SA1027R
Q920	8-729-195-23	2SA952
Q921	8-729-612-77	2SA1027R

ICs

Ref. No.	*Part No.*	*Description*
IC101, 201	8-759-101-74	CX174
IC102	8-759-145-57	μPC4557C
IC103	8-759-745-60	NJM4560D
IC104	8-759-145-58	μPC4558C
⇒IC401	8-759-993-51	MSL9351
IC601	8-759-147-74	μPD547C-074
IC602	8-759-240-19	TC4019BP
⇒IC603, 604	8-759-140-69	μPD4069C
IC605	8-759-133-90	μPC339C
⇒IC606	8-759-145-58	μPC4558C
⇒IC901	8-759-700-58	NJM4558DFA
IC902	8-759-145-58	μPC4558C
IC903	8-759-690-00	CX069
IC904, 905	8-759-145-58	μPC4558C

Diodes

Ref. No.	*Part No.*	*Description*
D101, 201	8-719-815-55	1S1555
D102, 202		
D103, 203		
D104, 204		

- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	*Part No.*	*Description*
D105, 205 D301–303	8-719-815-55	1S1555
D304, 305	8-719-910-65	HZ6B2L
D401	8-719-815-55	1S1555
D601–612	8-719-200-02	10E2
D613	8-719-910-15	HZ11B2L
D614	8-719-990-92	HZ9A2L
D615	8-719-815-55	1S1555
D616	⚠8-719-200-02	10E2
D617, 618	8-719-815-55	1S1555
D619	8-719-200-02	10E2
D620–623	8-719-815-55	1S1555
D624	8-719-910-11	SR110
D625	8-719-319-41	SEL1941D
D626	8-719-311-12	SEL1112R
D627, 630	8-719-317-33	SEL1733Y
D628, 629	8-719-313-31	SEL1331G
D631, 632	8-719-200-02	10E2
D633–635 D901–905	8-719-815-55	1S1555
D906	8-719-910-65	HZ6B2L
HE901–904	8-719-841-02	F1410

CAPACITORS

All capacitors are in μF. Common capacitors are omitted. Refer to the lists on pages 75 and 76 for their part numbers.

C117, 217	1-130-305-00	0.022	100 V	polyethylene
C119, 219	1-123-232-00	4.7	50 V	electrolytic
C122, 222	1-130-307-00	0.027	100 V	polyethylene
C124, 224	1-123-228-00	1	50 V	electrolytic
C136, 236	1-123-232-00	4.7	50 V	electrolytic
C137, 237	1-123-232-00	4.7	50 V	electrolytic
C301, 302	⚠1-121-422-11	220	25 V	electrolytic
C601	⚠1-123-324-00	1000	16 V	electrolytic
C603, 604	⚠1-123-338-00	2200	25 V	electrolytic
C629, 630	⚠1-121-657-11	1000	25 V	electrolytic
C909	1-130-134-00	0.082	100 V	plastic

RESISTORS

All resistors are in ohms. Common ¼ W carbon resistors are omitted. Refer to the list on page 77 for their part numbers. kΩ: 1000 Ω

Ref. No.	*Part No.*	*Description*		
R160, 260 R195, 295	⚠1-212-865-00	22	¼ W	fusible
R303, 304	1-214-727-00	820	¼ W	metal-oxide
R305, 306	1-214-731-00	1.2 k	¼ W	metal-oxide
R926	1-214-778-00	110 k	¼ W	metal-oxide
R928, 929	⚠1-213-036-00	1	1 W	fusible
R973, 974	⚠1-212-368-00	4.7	1 W	fusible
RV101, 201	1-226-839-00	20 k-A, variable; REC LEVEL		
RV102, 202	1-224-645-XX	10 k, adjustable; PB level		
RV103, 203	1-224-647-XX	47 k, adjustable; REC level		
RV104, 204	1-226-235-00	5 k, adjustable; meter level		
RV726	1-226-241-00	470 k, adjustable; fast reverse		
RV901	1-224-491-00	22 k, adjustable; tape speed		
RV902, 903	1-224-642-XX	1 k, adjustable; capstan-motor gain		
RV904, 905	1-224-641-XX	470 k, adjustable; reel-motor gain		
RV906–909	1-224-645-XX	10 k, adjustable; reel-motor offset		
RV910	1-224-642-XX	1 k, adjustable; reel-motor gain balance		

MISCELLANEOUS

CNJ1	1-507-531-00	Board, jack; 4-pin; LINE IN/ LINE (FIXED) OUT
CP1	⚠1-231-057-00	Encapsulated Component (AEP, E, UK model)
	⚠1-231-326-00	Encapsulated Component (US model)
E/RP	8-825-728-60	Head, erase/record/playback; (EPS202-3602)
F1–3	⚠1-532-203-00	Fuse, T2 A (AEP, E, UK model)
F4, 5	⚠1-532-215-00	Fuse, T0.8 A (AEP, E, UK model)
HJ301	1-507-553-00	Jack, stereo-binaural; HEADPHONES
J101, 201	1-507-666-00	Jack, phone; MIC
L101, 201	1-231-388-00	Filter, low-pass
L102, 202	1-408-256-00	Microinductor, 8.2 mH

Ref. No.	*Part No.*	*Description*
L103, 203 L104, 204	1-408-254-00	Microinductor, 5.6 mH
L105, 205	1-408-253-00	Microinductor, 4.7 mH
L106, 206	1-408-262-00	Microinductor, 27 mH
PL1–3	1-518-305-21	Lamp, 8 V 50 mA
PL4, 5	1-518-305-31	Lamp, 8 V 50 mA
PL6, 7	1-518-417-00	Lamp, 8 V 0.1 A
PL8	1-518-340-71	Lamp, 8 V 50 mA
PM1, 2	⚠1-454-222-11	Solenoid, brake/head
RY1	1-515-323-00	Relay
S1	1-553-272-00	Switch, pushbutton; INPUT
S2	1-553-217-00	Switch, level-slide; DOLBY NR
S3	1-553-215-00	Switch, lever-slide; TAPE
S4	———	
S5	1-552-876-00	Switch, pushbutton; PEAK HOLD RESET
S6	———	
S7	1-553-323-00	Switch, rotary; LINE OUT/ PHONES
S8	1-552-807-00	Switch, rotary; BIAS
S9	———	
S10–17	1-552-539-00	Switch, keyboard
S18, 19	1-552-520-00	Switch, slide; TIMER, MEMORY
S20	1-553-273-00	Switch, pushbutton; DIRECTION MODE
S21–23	1-552-268-00	Switch, slide; accidental-erasure prevention/cassette-lid
S24	1-548-537-51	Counter, tape
S25	1-516-686-00	Switch, lever-slide; tape-direction
S26	⚠1-552-530-00	Switch, pushbutton; POWER (US model)
	⚠1-552-903-00	Switch, pushbutton; POWER (AEP, E, UK model)
SW901	1-553-325-00	Switch, adjustable; test
T	⚠1-446-729-00	Transformer, power (US model)
	⚠1-446-730-00	Transformer, power (AEP, E, UK model)
	A-2133-069-A	Motor Ass'y, capstan
	A-2133-070-A	Motor Ass'y, reel

Ref. No.	*Part No.*	*Description*
	1-464-124-00	Bias Osc Unit
	1-507-526-21	Board, jack; 2-pin; VARIABLE LINE OUT
	●1-508-878-00	Post, base 3-pin
	●1-508-879-00	Post, base 4-pin
	⚠1-526-576-31	Voltage Selector (AEP, E, UK model)
	⚠1-526-609-00	Connector, AC OUTLET (US model)
	1-533-125-00	Holder, fuse (AEP, E, UK model)
	●1-535-115-00	Terminal, base 2-pin
	●1-535-121-21	Terminal, base 8-pin
	⚠1-551-507-00	Cord, power (US model)
	⚠1-551-530-00	Cord, pwoer (E model)
	⚠1-551-817-31	Cord, power (AEP model)
	⚠1-551-884-31	Cord, power (UK model)
	●1-560-060-00	Pin, connector; 2-pin
	●1-560-061-00	Pin, connector; 3-pin
	●1-560-062-00	Pin, connector; 4-pin
	●1-560-063-00	Pin, connector; 5-pin
	●1-560-064-00	Pin, connecotr; 6-pin
	●1-560-065-00	Pin, connector; 8-pin
	1-561-528-00	Connector, 5-pin; REMOTE
	1-800-822-11	LED meter

PRINTED CIRCUIT BOARDS

●1-602-679-00	REC LEVEL Control
●1-602-680-00	Mic Amp
●1-602-681-00	Headphone
●1-602-682-00	Input/output
●1-602-683-00	VARIABLE Line Out
●1-602-684-00	Meter
●1-602-685-00	Peak-hold reset
●1-602-688-00	Timer
●1-602-689-00	Memory
●1-602-690-00	Shut-off
●1-602-691-00	Mode-indication
●1-602-692-00	Mode Switch
●1-602-693-00	TR1
●1-602-694-00	TR2
●1-602-695-00	TR3

Ref. No.	*Part No.*	*Description*
	⚠1-602-696-00	Direction
	⚠1-602-697-00	Head-relaying
	⚠1-602-699-00	Function Switch

COMPLETE CIRCUIT BOARDS

Ref. No.	*Part No.*	*Description*
	⚠ A-2010-163-A	Record/playback Amp
	⚠ A-2019-111-A	System-control
	⚠ A-2020-067-A	Servo

ACCESSORIES & PACKING MATERIALS

Part No.	*Description*
3-558-465-00	Cushion
3-572-374-00	Bag, plastic
3-572-380-00	Carton
3-572-383-00	Carton, RM (US, E model)
3-701-811-04	Card, caution (US model)
3-783-171-11	Manual, instruction (AEP, E, UK model)
3-783-171-21	Manual, instruction (US model)
3-793-828-11	Card, caution
3-794-233-21	Card, cassette (US model)
3-794-935-51	Card, instruction (US, E model)
7-824-012-11	Card, cassette (US model)
7-824-012-12	Card, cassette (AEP, E, UK model)

ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING			→: Use the high voltage rated one.		
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

RATING							
CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

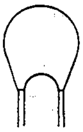
CERAMIC (SEMICONDUCTOR) CAPACITORS

RATING		→: Use the high voltage rated one.			
CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

RATING											
CAP. (µF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (µF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (µF)	50 VOLT.	100 VOLT.	200 VOLT.
	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.		PART No.	PART No.	PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

TANTALUM CAPACITORS



	RATING			→: Use the high voltage rated one.			
CAP. (µF)	3.15 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	25 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS

			RATING			
CAP. (µF)	3 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

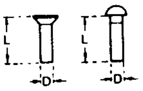
1/4 WATT CARBON RESISTORS

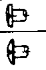
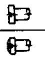
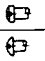
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:

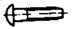
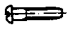
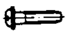
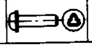
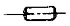
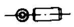
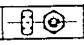
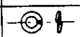
P 3 x 10
L: Length in mm
D: Diameter in mm
Type of head
Indicated slotted-head only.
Unless otherwise indicated, it means cross-recessed head (Phillips type).



Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Nut, Washer, Retaining ring:

N 3
Diameter of usable screw or shaft
Reference designation

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	